

**Curry  
Hardwood Conversions**

**Environmental Assessment**

**EA: OR 128-03-02**

**Myrtlewood Field Office  
Coos Bay District**

**Bureau of Land Management**



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## **Appendix A - Maps**

Project Vicinity Map  
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## **Appendix B - Unit Summary**

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**Table B 2** - Units Deferred

**Table B 3** – Anticipated Impact Season and Year

## **Appendix C - ACS Objectives**

## **1.0 PURPOSE OF AND NEED FOR ACTION**

### **1.1 Background**

The Bureau of Land Management proposes to implement intensive forest management of matrix lands in T.39S., R.13W. and T.40S., R.13W, within Curry County, Oregon. Several active forest management treatments would be required to establish conifer species where hardwoods currently reside. These treatments include the cutting of existing hardwoods (primarily tanoak), road construction, and road renovation, down wood and snag creation, firewood removal, broadcast burning, tree planting and treatments to establish Douglas-fir trees. This environmental assessment (OR128-03-02) will address site specific, direct, indirect, and cumulative effects of the proposed action.

A watershed analysis is required prior to implementing certain management activities within a Key Watershed. The North Fork Chetco Watershed Analysis outlined several management opportunities for restoring and enhancing ecosystem conditions. Among the opportunities listed within the analysis were hardwood stand conversions, road renovation, down wood/snag enhancement, and in-stream restoration.

Objectives for Tier 1 Key Watersheds, including the North Fork Chetco, can be found within the ROD for the Northwest Forest Plan. In summary, these areas are intended to be refugia crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. These areas are the highest priority for watershed restoration activities (ROD, p. B-19).

Watershed Restoration is the fourth component of the Aquatic Conservation Strategy Objectives. Where riparian vegetation is concerned, "Active silvicultural programs will be necessary to restore large conifers in Riparian Reserves. Appropriate practices may include reforestation shrub and hardwood-dominated stands with conifers" (ROD, p. B-31).

### **1.2 Tiering/Incorporate by Reference**

This environmental assessment is tiered to the *Coos Bay District Resource Management Plan* and its *Record of Decision* (RMP-ROD, USDI-BLM, 1995), which is in conformance with the *Northwest Forest Plan* and its *Record of Decision*. This environmental assessment is also tiered to the *Final Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and other Mitigating Measures Standards and Guidelines* and its *Record of Decision* (S&M ROD, Interagency, 2001). Additionally this environmental assessment incorporates by reference the *Western Oregon Districts Transportation Management Plan* (USDI-BLM, 2002) and *Partners against Weeds – An Action Plan for the BLM* (USDI-BLM-1996). Actions described in this environmental assessment are designed to be consistent with the Aquatic Conservation Strategy Objectives listed on page B-11 of the Northwest Forest Plan - Record of Decision.

All of the documents and the analysis file (which is incorporated by reference) are available for review at the Coos Bay District Office of the Bureau of Land Management, during regular business hours. Some of the above documents are available at the Coos Bay and North Bend Public Libraries, the Coos Bay District's Internet Home Page at <http://www.or.blm.gov/coosbay>, and the Oregon State Office of the Bureau of Land Management in Portland, Oregon.

### **1.3 Scoping**

A scoping process identified agency and public concerns related to the proposed action and defined the issues and alternatives to be examined in detail during the environmental assessment process. Public scoping was conducted for this proposed action for the period of October 11, 2002 to November 12, 2002. The general public was notified of the planned environmental assessment through the publication of the Coos Bay District's *Planning Update*, posting on the Coos Bay District Web page, and a Public Notice was published in *The World* newspaper. Scoping letters and/or e-mail were sent to a mailing list of individuals,

agencies, and organizations that have requested project notification. Scoping letters were also sent to adjacent landowners to inform them of the project proposals.

List of Adjacent Landowners Contacted:

South Coast Lumber Co.

List of Individuals, Agencies & Organizations Contacted:

Association of O&C Counties  
Coast Range Association  
Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians  
Department of Land Conservation and Development  
Division of State Lands  
Douglas Timber Operators  
Pam Hewett (Many Rivers Group)  
Kalmiopsis Audubon Society  
Hugh Kern  
Klamath – Siskiyou Wildland Center  
NOAA Fisheries  
Oregon Natural Resources Council  
Carl Barnett (Pacifi Corp)  
Joe Serres, KSWC  
Sierra Club, Many Rivers Group  
Siletz Tribal Council  
Southern Oregon Timber Industries Association  
Umpqua Watersheds  
Wildlife Management Institute

List of Scoping Respondents:

Joseph Vaile – Klamath – Siskiyou Wildlands Center

## 1.4 Location of the Proposed Project

The proposed action would occur within Matrix (General Forest Management Area) and Riparian Reserve land use allocations, as designated by the *Coos Bay District Resource Management Plan and Record of Decision*.

The proposed action would occur within the North Fork Chetco and South Fork Pistol subwatersheds. The area considered for analysis includes T. 39S R. 13 W. and T. 40 S. R 13 W., Willamette Meridian. The analysis area is located within Curry County, OR approximately 4 miles north of Brookings, OR. See Appendix A - Project Location Map Proposed Hardwood Conversion Units.

The following issues, management objectives, and opportunities were identified during scoping and Interdisciplinary Team meetings:

## 1.5 Issues Concerning the Proposed Project

- Hardwood species occupying productive sites in GFMA land allocations that are suitable for establishment and growth of commercial conifer.
- Sediment delivery to the stream network.

## 1.6 Management Objectives

- Apply silvicultural treatments to produce intensively managed commercial Douglas-fir stands on sites suitable for conifer survival and growth. Conversion of stands from hardwood to conifer species would contribute towards the Coos Bay Districts RMP goal of 1,200 acres of hardwood or brush field conversion in the first decade of the RMP.
- Maintain some structural components from existing stands in converted stands, in Riparian Reserve areas and in upland areas. Structural components would include acorn-producing hardwoods, large diameter conifers, and streamside down wood and organic matter components.
- Ensure consistency with Aquatic Conservation Strategy objectives, including establishment of large conifers in Riparian Reserves, and maintenance of water quality and sediment regimes normally found within the watershed.
- Maintain special habitats, including wetlands, cliff habitats, talus habitats not suitable for conifers, and meadows.

## 1.7 Opportunities

- Provide firewood and limited quantities of tanoak logs for other possible economic uses in slashing units outside of the Sudden Oak Death Quarantine area.

## 1.8 Issues Identified but Eliminated from Analysis

The following issues were identified during public scoping, but were resolved during Interdisciplinary Team meetings and eliminated from further analysis:

- **Perform meadow and oak savannah restoration**  
None of the proposed treatment units were identified as historic or potential meadow sites or white oak savannah sites. The majority of meadow and white oak savannah habitat occurs on private lands. The purpose of the proposed action is to apply intensive forest management activities to matrix lands capable of growing conifers and to provide future large woody debris to streams.
- **Prohibit road building**  
Alternatives eliminating road construction did not fully meet the objectives of the proposed action. Road construction was considered only in areas outside of The North Fork Chetco Key Watershed, in locations with no stream crossings, and restricted to the minimum area necessary to provide access to a manageable hardwood conversion unit. Only road construction with little or no resource impacts was considered.
- **Prohibit heavy equipment in sensitive areas**  
None of the alternatives proposed use of heavy equipment in sensitive areas.
- **Impose 12" diameter limit on all trees to be cut**  
A 12" diameter limit would not meet the silvicultural objectives of converting hardwood stands to conifer stands, and would create a future safety hazard in the stands because of the large number of snags subject to wind throw. All hardwoods 20" DBH and larger and all conifers 16" DBH and larger would be left in proposed treatment units to provide structural diversity and some acorn production. These trees left would not be a hindrance to worker safety.
- **Use of alternative fuel treatments**  
Mechanical treatment methods (piling, chipping) were considered, but are not operationally feasible due to high slash loading and steep slopes. Best management practices would be utilized

to protect soil resources and prevent sediment from entering streams by use of no treatment areas, timing of burns, and ignition patterns.

## **2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION**

### **2.1 No Action Alternative**

Under this alternative, forest management activities would not occur at this time for these specific locations. Current forest stand conditions would be left to develop without intervention. Road conditions and densities would remain the same. Habitat enhancements, such as the creation of snag/coarse woody material, or streamside coarse woody debris and organic matter components would not occur.

### **2.2 Proposed Action Alternative**

The Bureau of Land Management proposes to convert approximately 322 acres of hardwoods in T.39S., R.13W. and T.40S., R.13W. This intensive forest management of matrix lands would include the cutting of existing hardwoods (primarily tanoak), broadcast burning, road construction and road renovation to facilitate broadcast burning and future fire suppression activities, down wood and snag creation, firewood removal, limited removal of tanoak for specialty markets, tree planting and management to establish Douglas-fir trees. The proposed action would require construction of 0.4 miles of new road on BLM lands and 0.2 miles on private industrial forest lands, and renovation of 0.6 miles of current road. Treatments would be implemented over a five-year planning cycle. Projects would begin as early as fiscal year 2003.

The process of developing potential treatment units led to elimination of many stands from consideration. Only stand types that are dominated by hardwoods were considered for conversion. Mixed conifer-hardwood stands capable of producing conifer volume in excess of green leaf tree requirements were considered to be commercial conifer harvest stands. Hardwood stands within T.39S., R.13W. and T.40S., R.13W. that required new road construction across riparian reserves for access, new road construction in NF Chetco Key Watershed, or new road construction across U.S. Forest Service lands were not considered. In addition, units having mid-slope firelines or units adjacent to recently thinned mixed conifer/hardwood stands were eliminated from consideration. All such stands amounted to approximately 705 acres. Thus, only 29 stands, totaling 448 acres were considered part of the proposed action. Of these 29 potential treatment units, the interdisciplinary team dropped an additional 9 units, totaling 126 acres (Appendix B, Table B-2 - Units Deferred).

#### **2.2.1 Prescriptions**

##### **Silvicultural treatments**

Approximately 322 acres of hardwood stands would be treated within the remaining 20 separate units. Of the 322 acres of hardwood conversion, approximately 54 acres are also within Riparian Reserves (based on site potential tree heights). A variable width no-treatment buffer would be established around all defined stream channels and selected ephemeral channels not meeting the Northwest Forest Plan definition of a stream channel. No-treatment buffers in these areas would be a minimum of 20 feet in width on both sides of a stream channel or selected ephemeral channel, 20 feet from the top of the inner gorge, or 20 feet from the edge of the floodplain – whichever is greater. No-treatment buffers would be prescribed on a site-specific basis to provide additional protection wherever it may be warranted.

All proposed units would be slashed, downed material allowed to cure through a summer season, then broadcast burned in the winter or spring (after significant amounts of rainfall has occurred to protect soils and to achieve the burn prescriptions), a manual (chainsaw) maintenance of competing hardwood sprouts may be needed prior to tree planting for units burned in the spring. Planting to Douglas-fir would be accompanied by an application of slow release fertilizer packets to provide a competitive advantage for growth. See Appendix B, Table B 1-Detailed Unit Information.



In conversion units, within areas supporting large diameter ( $> 20''$ ) conifers remnant from previous disturbance, some large trees would be identified (marked with orange paint) to act as structural diversity trees. Attempts would be made to retain structural diversity trees during broadcast burning (described in project design criteria). Fewer than 10 structural diversity trees would be identified per treatment unit, although exact numbers would depend on specific stand conditions. Less than 200 structural diversity trees would be identified and marked associated with the proposed action.

Existing down wood and snags would not be protected during broadcast burning. Broadcast burning would create new snags and down wood from standing Douglas-fir  $> 16''$  diameter and standing tanoak  $> 20''$  diameter. Created snags and down wood would provide habitat for a variety of wildlife, including birds, herpetiles, and small mammals. Trees and snags that posed a safety threat or interfered with site preparation would be felled prior to site burning, these felled snags would become down wood material.

### **Road Construction**

New road construction would consist of approximately 0.4 miles of rocked surface resource roads and landings on BLM lands and 0.2 miles on private industrial forestlands. New road construction is defined as excavating a road prism where one had not existed previously. The road prism will include design features such as drainage, out sloping, waterbarring and ditchlines. This road would be located on a stable bench near a ridgeline, with no stream crossings. The new road construction would include curve widening and turnouts. Cleared slash will be piled and burned along the right-of-way. Any merchantable trees within the right-of-way clearing limits may be removed and sold. Landings for fire equipment and water storage would be approximately  $\frac{1}{4}$  acre in size including the existing roadbed. This new road would be designed so that little seasonal preventative maintenance (storm proofing) prior to water haul for fuels management would be necessary.

Road construction would incorporate design features to minimize erosion and the capacity to transport sediment. These Best Management Practices (Record of Decision 1995, pp. D3-D4) may include but are not limited to; avoiding fragile or unstable areas, minimizing excavation and height of cuts, end haul of waste material where appropriate and construction during the dry season. No new roads would be constructed in the Key Watershed in the North Fork Chetco subwatershed.

### **Road Renovation**

Approximately 0.6 miles of road renovation would occur on 39-13-17.0 A and 39-13-31.0 to improve drainage and surface conditions. Actions could include cleaning/installing culverts, restoring proper drainage/grading, or other maintenance.

## **Road Maintenance**

Most roads used are not expected to require maintenance during the life of the project. South Coast Lumber Co. would carry out any necessary cleaning or brushing as they control the bulk of the road system in both drainages.

## **Firewood or Specialty Market for Hardwoods**

The only current demand for tanoak and madrone was found to be firewood and a very limited specialty market for hardwood flooring. Tanoak for firewood and for the limited hardwood flooring market would be provided where feasible along roadsides of conversion units, assuming interested parties could be found. These parties would need to meet bonding and insurance requirements for ingress and egress along privately controlled roads in the project area. Both the firewood and hardwood specialty market may remove hardwoods as cordwood or as logs. Only units with slopes less than 35% or adjacent to roads on the downhill side, outside of Riparian Reserves or environmentally sensitive areas, and outside of the Sudden Oak Death quarantine area would be considered. As a result, only unit numbers 12, 13, 14, 15, 17, 19, 22, 23, 24, and P4 would be considered for firewood and hardwood specialty markets.

## **Fuels Management**

Fuels management activities would include site preparation and hazardous fuels reduction. Site preparation activities generally include hand construction of firelines, slash pull back, broadcast burning, helicopter and hand ignition, temporary placement of hose, porta-tanks and installation of pumps to assist in control of the fuels reduction activities. Firelines would be located outside conversion units and within the no treatment areas.

## **2.2.2 Project Design Features**

### **Project Design Features for Tree Falling & Slashing**

- Tree falling, slashing, or other potentially disturbing activities will not take place within ¼ mile of any northern spotted owl nest site or activity center between 1 March and 30 June. Agency biologists have the option of extending the restricted season until September 30th based on site-specific conditions at the site.
- Tree falling, slashing, or potentially disturbing activities will not take place within ¼ mile of a marbled murrelet occupied site or high potential habitat between 1 April and 5 August. In addition, between 6 August and 15 September, confine potentially disturbing activities (i.e. above ambient noise) to between 2 hours after sunrise to 2 hours before sunset (daily timing restrictions).
- Fall all hardwoods less than 20 inches DBH and all conifers less than 16 inches DBH.
- All blowdown trees in units would be severed from the root wad at a point that the operator can safely cut the bole.
- A variable width no-treatment buffer would be established around all NWFP intermittent streams and other selected ephemeral channels not meeting the definition. There would be a no-treatment buffer 20 feet or wider along stream banks, any unstable area near the banks, or top of the inner gorge. The no-treatment buffer would be expanded on a site-specific basis to provide additional protection to seeps, fish bearing streams, and unstable areas.
- Within safety standards, all trees within conversion units would be directionally felled away from roads, property lines, posted boundaries, orange painted reserve trees (including wildlife trees), and no-treatment areas.

### **Project Design Features for Firewood Cutting and Hardwood Specialty Market**

- No ground-based equipment will be permitted to operate in no-treatment areas, in Riparian Reserves, adjacent to stream channels or on slopes greater than 35%.
- Ground-based equipment will be permitted off the road systems only during the dry season or when soil moisture content is less than 25% as determined by the Authorized Officer.
- No firewood or log removal will occur within the Sudden Oak Death quarantine area.
- Chainsaw operation, yarding, loading, hauling, or potentially disturbing activities will not take place within ¼ mile of a marbled murrelet occupied site or high potential habitat between 1 April and 5 August. In addition, between 6 August and 15 September, confine potentially disturbing activities (i.e. above ambient noise) to between 2 hours after sunrise to 2 hours before sunset (daily timing restrictions).

### **Project Design Features for Road Construction and Renovation**

- When possible, road construction, renovation will not occur 1 March to 30 September within ¼ mile of a known northern spotted owl site.
- When possible, road construction, renovation will not occur 1 April to 15 September within ¼ mile of a marbled murrelet occupied site or high-potential habitat. If they do occur, apply daily timing restrictions.
- No blasting will take place within 1 mile of any northern spotted owl nest site or activity center between 1 March and 30 June. Agency biologists have the option of extending the restricted season until September 30th based on site-specific conditions at the site.
- No blasting will take place within 1 mile of a marbled murrelet occupied site or high potential habitat between 1 April and 5 August. In addition, between 6 August and 15 September, confine blasting to between 2 hours after sunrise to 2 hours before sunset (daily timing restrictions).
- Slash generated from clearing the right-of-way will be piled and burned prior to slashing the unit.
- Road construction will incorporate design and construction features to protect water quality. These BMPs (RMP ROD p. D3, D4) may include but are not limited to avoiding fragile or unstable areas, minimizing excavation and height of cuts, end haul of waste material where appropriate, and construction during the dry season.
- Wash all construction equipment before entry on BLM lands, does not include service vehicles. Ensure that gravel and fill come from noxious weed free sources.
- After road and landing construction is complete, all bare soil areas on road cuts, fills, and landing areas will be grass seeded with native grass seed, if seed is available, or approved BLM seed (weed free) mix and mulched with weed free straw at the rate of 2,000 lbs/acre.

### **Project Design Features for Fuels Management**

- All harvest and post-harvest activities will comply with applicable State of Oregon Fire Regulations. Slash Disposal would be conducted under the direct oversight of Bureau of Land Management personnel and would comply with the State of Oregon Smoke Management Guidelines and the Clean Air Act.

- To facilitate site preparation activities, directional falling away from all project area boundaries, roads, property lines, no-treatment areas, leave trees and managed known site buffers for Survey & Manage species would be required. Treetops and limbs that fall into these areas will be cut and brought back into the unit area, except when adjacent to leave trees.
- Broadcast burning will be used for site preparation and would be conducted under spring-like conditions, during the winter-spring season to provide a low severity burn. Closely monitored helicopter ignition will be used to ensure low severity burning conditions in all units. All burned areas will be 100% mopped up.
- Broadcast burning will be conducted under these conditions: 1) the area to be broadcast burned has a defensible boundary, 2) the area has sufficient access for crews, equipment and adequate nearby water resources for holding and mop up operations, and 3) the fire operations are in full compliance with State of Oregon fire regulations and District Burn Plan.
- Helicopter Use: Frequent helicopter use (occurs day-after-day for several days) will not take place within ½ mile of any northern spotted owl nest site or activity center between 1 March and 30 June. During short term or incidental helicopter use, pilots would be directed to avoid flying near the vicinity of nests (approximately ½ mile) from 1 March to 30 September. The intent is that short-term (including aerial ignition site prep) or incidental helicopter use would not require the seasonal restriction, but that an attempt would be made to avoid flying near known sites during the nesting season, especially the early part of the season.
- Helicopter Use: Frequent helicopter use (occurs day-after-day for several days) will not take place within ½ mile of a marbled murrelet occupied site or high potential habitat between 1 April and 5 August. In addition, between 6 August and 15 September, confine activities to between 2 hours after sunrise to 2 hours before sunset (daily timing restrictions). During short term or incidental helicopter use, pilots would be directed to avoid flying near the vicinity of occupied sites (approximately ½ mile) from 1 April to 15 September. If they do occur, apply daily timing restrictions. The intent is that short-term (including aerial ignition site prep) or incidental helicopter use would not require the seasonal restriction, but that an attempt would be made to avoid flying near known sites during the nesting season, especially the early part of the season.
- Burning: When possible, burning activities will not occur within ¼ mile of a known northern spotted owl site between 1 March and 30 September. Avoid allowing heavy concentrations of smoke to linger in known sites and avoid walking through or flying near core areas during the same period.
- Burning: When possible, burning activities will not occur within ¼ mile of a known marbled murrelet site between 1 April and 15 September. If they do occur, apply daily timing restrictions. Avoid allowing heavy concentrations of smoke to linger in known sites and avoid walking through or flying near occupied areas during the same time frame.

#### **Project Design Features for Structural Diversity Trees**

- Structural diversity trees are defined as large diameter (> 20") conifers identified with orange paint. Only conifers painted orange will be considered structural diversity trees. A maximum of 10 structural diversity trees will be identified in each treatment unit. A maximum of 200 structural diversity trees will be identified for the entire analysis area.
- A 50' (radius) slash-free (limbs and tops) zone will be maintained around structural diversity trees, to ensure tanoak slash does not accumulate beneath crowns of structural diversity trees. Directional falling will be used to keep slash out of slash-free zones. All slash 6" and less will be removed from the slash-free zone and scattered in the treatment unit.

### **Project Design Features for Noxious Weeds**

- All tracked or wheeled vehicles will be washed, including belly pans, prior to entering BLM lands. Vehicles are required to stay within the road rights-of-way, except those specifically designated to operate within units (i.e. road construction equipment). This does not apply to service vehicles that will stay on roadways.
- All silvicultural contracts will include cutting of all noxious weeds if found in treatment units. All locations would be reported to the BLM, if found.
- BLM controlled roads and lands would be monitored for noxious weeds for potential spread from private lands and treated when found.
- See additional Design Features for Noxious Weeds listed in the Analysis file.

### **Project Design Features for Sudden Oak Death (SOD)**

- Units within the SOD quarantine area will be cut last.
- All vehicles will stay on rocked roads within the quarantine area. If a vehicle is exposed to mud in an infection site within quarantine area, the undercarriage shall be washed prior to leaving the quarantine area.
- All chainsaws shall be cleaned of sawdust and wood chips prior to moving to a site outside of the quarantine area.
- At the completion of each workday, all boot soles of contractor's employees shall be sprayed with a 10% bleach solution, if working in an infection site. If contractor's employees' shoes or boots become muddy within quarantine area, they shall be cleaned or washed prior to leaving area.
- No vegetative material will be removed from the quarantine area.
- If any areas outside of the quarantine area are showing signs of massive dieback of leaves in tanoak, rhododendron, and/or evergreen huckleberry, the contractor shall immediately notify the BLM. If these dieback areas are determined to be SOD, the same design features applicable to the quarantine area will apply to these new infections. (The current treatment for SOD is eradication, which includes slashing and burning).

### **Project Design Features for Special Status Species**

- If any threatened or endangered species are found in the hardwood conversion units, and it is determined that operations may affect these species, operations may be discontinued until consultation for the species is completed.
- Prior to advertising of procurement contracts, required surveys will be done to protocol and management guidelines will be implemented.
- If Special Status species are found and require a protection buffer, an appropriate buffer will be identified and reserved from cutting prior to the initiation of slashing activities.
- Incorporate all applicable Project Design Features, including seasonal or daily timing restrictions, and Terms and Conditions, from the U.S. National Marine Fisheries and U.S. Fish & Wildlife Service Biological Opinions.

### **Project Design Features for Cultural Resources**

- Native American Grave Protection and Repatriation Act (43 CFR Part 10; IM OR97-052) notification requirements will be followed.
- If any cultural materials are encountered during the project, all work in the vicinity will stop and the District Archaeologist will be notified at once.

### **Project Design Features for Solid and Hazardous Waste**

- Contracts will contain provisions for compliance with the State of Oregon Department of Environmental Quality (ODEQ 1998) and Oregon Department of Forestry Forest Practices (ODF 1998) guidelines for spill response and containment. Site monitoring for solid and hazardous waste will be performed during all operations in conjunction with normal contract administration. Any spills or releases resulting from operations shall be subject to the Coos Bay District Hazardous Materials Management Contingency Plan (USDI BLM, 1997). Hazardous material reportable quantities are defined in ORS Chapter 4661, Hazardous Waste and Hazardous Materials 466.605 to 466.680.

## **2.3 Alternatives Identified but Eliminated from Further Analysis**

### **Commercial Timber Sale of Tanoak Including Yarding and Log Haul**

This alternative was rejected because it was found through a survey of local sawmills, particleboard, and veneer plants that there was no large-scale commercial value for tanoak and madrone. There are no local wood chip processing plants. A distant co-generation facility in Medford, OR was contacted and they stated there was no desire for them to buy or use tanoak in their plant.

The only current demand for tanoak and madrone was found to be firewood and a possible limited market for hardwood flooring. There also has been a sporadic demand for tanoak chips, but generally, the cost of logging and hauling exceeds the value paid for chips. Firewood and the potential hardwood flooring market would be provided where feasible along roadsides of conversion units, if interested parties could be found that could meet bonding and insurance requirements for ingress and egress along privately controlled roads in the project area.

### **No New Road Construction**

Little to no impacts would be associated with new road construction. The new road location is in an upper bench location, does not cross streams, and is 1.1 miles from the nearest fish habitat. This road would provide access to 80 acres of hardwood conversions and would be necessary for prescribed fire activities and future land management.

### **No Treatment in Riparian Reserves**

This alternative was considered but eliminated because it would be inconsistent with the *Aquatic Conservation Strategy Objectives*. This alternative would not develop conifers in Riparian Reserves for future down wood recruitment. BLM lands would be the future source of large woody debris in the watersheds. No treatment areas would be established within riparian reserves adjacent to streams in treatment units. These no treatment areas would provide adequate sediment protection to streams.

### **Hardwood Conversion of Units Directly Adjacent to Occupied Murrelet Habitat**

This alternative was considered but eliminated because it could have a direct impact on murrelets by fragmenting forest cover and increasing predator bird species in conversion units (Crazy 8's area) adjacent

to occupied murrelet stands. These occupied stands are the largest contiguous area of old growth Douglas-fir on BLM lands in T. 40S., R. 13W. Also there is an occupied owl nest in this same area.

## **3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

### **3.1 Introduction**

This section describes the environmental components that would be affected by the Proposed Action, if implemented. This section does not address the environmental effects or consequences, but rather serves as the baseline for the comparisons in Chapter 4 - Environmental Consequences.

A review of the existing environment shows that the following list of critical elements of the human environment are either not present or would not be affected by these projects; therefore they would not be addressed in this EA: Farmland (Prairie/Unique), Wild and Scenic Rivers, and Wilderness.

The analysis area is located in the Klamath Mountains Physiographic Province. This province is the most diverse in western Oregon, encompassing climatic, geomorphic and floral elements from California, north coastal Oregon and eastern Oregon, including many endemic species (Campbell et al. 2002, Franklin and Dyrness 1973). The analysis area, including portions of the North Fork Chetco and South Fork Pistol Subwatersheds, encompasses portions of the Southern Oregon Coastal Mountains Ecoregion and the Coastal Siskiyou Ecoregion (Maguire 2001). These ecoregions have a maritime climate, transitional between the Siskiyou Mountains and the Coast Range, and generally support productive forests.

The hardwood conversion units proposed under this environmental assessment, are located within the North Fork Chetco Subwatershed (6<sup>th</sup> field), a Tier 1 key watershed. Three units are located in the South Fork Pistol Subwatershed that is part of the Pistol River 5<sup>th</sup> field watershed. Elevation of the proposed project area is within the range of 800 - 2,200 feet. The drainage area of the North Fork Chetco Subwatershed is approximately 25,562 acres or 40 mi<sup>2</sup> whereas the South Fork Pistol River Subwatershed is approximately 16,295 or 25.5 mi<sup>2</sup>.

The total area within the subwatersheds considered in the analysis area is 46,356 acres. The majority (71%) of these subwatersheds are privately owned. The proposed project is located 4 to 12 miles north of Brookings, Oregon.

The South Fork of the Pistol River drains approximately 16,295 acres. BLM manages roughly 2,792 acres (17%), Siskiyou National Forest manages 2,102 acres (13%), and private industrial landowners manage 9,733 acres (60%). The State of Oregon and private, non-industrial landowners manage the remaining 1668 acres (10%).

The North Fork of the Chetco River drains approximately 25,562 acres. Of this total, roughly 9,263 acres (36%) are managed by the BLM, with the remaining 16,299 acres (64%) being managed by private landowners – predominantly South Coast Lumber Company.

Approximately 1,877 acres are within the Late-Seral Reserve land use designation, 890 acres in Connectivity, and 10,588 acres in General Forest Management Area.

### **3.2 Vegetation and Forest Ecology**

The analysis area is part of the mixed-evergreen (*Pseudotsuga-sclerophyll*) zone described by Franklin and Dyrness (1973), also called the Southwest Oregon Mixed conifer-hardwood forest (Johnson and O'Neil 2001). The mixed-evergreen zone extends from southwestern Oregon into northwestern California and is the dominant vegetation type in Curry County. Douglas-fir and tanoak are the major climax species in this zone (Franklin and Dyrness 1973). Other overstory trees include madrone (*Arbutus menziesii*), red alder (*Alnus rubra*), California laurel (*Umbellularia californica*), and knobcone pine (*Pinus attenuata*).

Common shrub species include evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), Oregon grape (*Berberis nervosa*), and Pacific rhododendron (*Rhododendron macrophyllum*). Common herbaceous species include sword fern (*Polystichum munitum*) and bear grass (*Xerophyllum tenuipes*).

Mixed-evergreen (tanoak) communities are not rare in the Klamath Mountains Province (Johnson and O'Neil 2001). Tanoak and mixed Douglas-fir/tanoak stands account for over 13,000 ac. (39 %) of private holdings in the analysis area; Douglas-fir dominated and mixed Douglas-fir/hardwood stands account for over 11,000 ac. (34 %) of private holdings (Figure FE-1, Analysis File). BLM holdings in the analysis area include over 4,900 ac. of tanoak and mixed Douglas-fir/tanoak stands (11% of the analysis area); Douglas-fir dominated stands account for almost 7,500 ac. (16% of the analysis area) (Figure FE-2, Analysis File).

Tanoak often dominates the understories of stands in this zone. Tanoak reproduces both sexually, by acorn, and vegetatively, from burls. Tanoak requires more moisture than many other hardwoods (Tappeiner et al. 1990). Tanoak sprouts vigorously after disturbance, including cutting and burning. Maximum stem ages are generally < 75 years old (Tappeiner and McDonald 1984), although burls may be much older.

Plant assemblages in the potential treatment units reflect the influence of climatic and geomorphic conditions. Units occupy mostly middle to upper slope positions, within 10 miles of the coast. Unit slopes average 30-60% and occur across a range of aspects. Douglas-fir dominates the overstory of these units, while tanoak dominates the understory and regeneration layers.

In plant association plots taken in potential treatment units, overstories were dominated by Douglas-fir and tanoak. Douglas-fir averaged over 9% cover. Tanoak averaged over 60% cover as an understory tree. Madrone was a minor understory component, averaging 9% cover. Knobcone pine, red alder, and California laurel occurred at covers < 2%. Tanoak dominated regeneration, averaging over 9 % cover. Douglas-fir regeneration averaged < 2% cover. Madrone and California laurel averaged < 1% cover in the regeneration layer.

Potential treatment units have low shrub and herb cover, probably due to high canopy cover. In plant association plots, evergreen huckleberry averaged over 12 % cover. Rhododendron cover averaged over 2%; other shrub species averaged < 1% cover. In the herb layer, sword fern averaged over 3 % cover; bracken fern cover averaged over 2 %. Other herbs averaged < 1% cover.

The majority of the analysis area is part of the tanoak (LIDE) series (Atzet et al. 1996). Most of the treatment units are best described by the LIDE3/VAOV2-RHMA3-GASH association (Atzet et al. 1996), comparable to the LIDE2/VAOV association (Jimerson et al. 1996).

### 3.2.1 Structural Conditions/ Seral Stages

Treatment units support large tree-multi-storied-closed canopy stands (Johnson and O'Neil 2001) most closely fitting the biomass accumulation/ competitive exclusion stage of forest development (Franklin et al. 2002). Density of the tanoak understory in treatment units averages over 1200 stems/ac., with a range of stem diameters (seedlings to >24" diameter) and canopy heights (< 60'). Overstory conifers (mainly Douglas-fir) average approximately 4 trees/ac., occurring mostly as a widely spaced residual overstory canopy (>24" diameter). Initiation dates for stands in the potential treatment units are generally between 1930 and 1940. Residual Douglas-fir that survived a 1930-era fire disturbance event are 90-110 years old.

The mid-seral stands that comprise the majority of the treatment units are typical of BLM ownership. These stands are older than most private ownerships in the analysis area. Over 60% of private ownerships in the analysis area are in age classes ≤ 60 years old (Figure FE-1, Analysis File). Less than 3% of private ownerships in the analysis area are in age classes > 120 years old. BLM ownership includes over 4,450 ac. (9.6% of the analysis area) in age classes ≤ 60 years old; over 8,890 ac. (19.1% of the analysis area) of BLM ownership is in age classes > 60 years old (Figure FE-2, Analysis File).

### **3.2.2 Disturbance Regime**

The historic fire return interval for the project area is between 60 and 90 years (Atzet and Wheeler 1982, USDA USDI 1995). Historic fire intensities in the analysis area were low to moderate (USDI 1997). The complex, multi-layered canopies, and open-grown morphology and minimal fire scarring in Douglas-fir stumps (90-110 years old) in proposed treatment units suggest a low- to moderate-severity fire regime (Johnson and O'Neil 2001). Fire suppression in the last 75 years has maintained widely spaced, large Douglas-fir and a dense tanoak understory in these stands. Tanoak brush fields, a climax community in south-facing ridgeline sites with intense or repeated-burns (Franklin and Dyrness 1973), were not observed in potential treatment units.

Timber harvest is currently the principle disturbance agent in the analysis area (USDI 1997). Extreme windstorms also disturb stands with a return interval between 30 and 100 years (Maguire 2001). In treatment units, 1-10 ac. wind throw gaps were observed, facilitating Douglas-fir establishment.

### **3.2.3 Down Wood and Snags**

Down wood and snag densities in natural stands in the Klamath Mountains province (Bingham and Sawyer 1991) are lower than natural stands in other Westside forests (Spies and Franklin 1991). Snags, down wood and large coniferous and hardwood trees in the analysis area have been reduced below historic levels due to changes in forest management and fire regimes since 1900 (Maguire 2001). Plant association plots taken in the analysis area estimated down wood levels at 8.6 pieces/ac (12''-20''). Large logs (decay class 3 -5) are conspicuously absent in most stands. Bingham and Sawyer (1991) estimated between 5.2 and 18.3 down logs/ac. (> 17 ") in similar naturally regenerating stands in the Klamath Mountains Province. The Southwest Oregon late-successional reserve assessment (USDA USDI 1995) suggests 15 pieces of down wood/acre for LSR areas. Mature stands in this province averaged 0.6 large (>16" diameter) conifer snags per acre (Bingham and Sawyer 1991). Hardwood snags (>8" diameter) averaged 2.7/ac.

## **3.3 Wildlife and Associated Habitats**

The North Fork Chetco (USDI 1997) and Pistol River Watershed Analyses (USFS 2002) provide a general description of wildlife species and habitat conditions found within the subwatersheds. The Final Coos Bay District Proposed Resource Management Plan/Environmental Impact Statement contains a complete list of wildlife species known to occur on the Coos Bay District (FRMP, Appendix T). The analysis file Table WL-1 lists all wildlife species associated with the southwest Oregon mixed conifer-hardwood forests (Johnson & O'Neil 2001). It also contains queries for habitat elements applicable to the project and species associated with those habitat elements (Johnson & O'Neil 2001). A complete list of wildlife special status species known or suspected to occur on the Coos Bay District is contained in the analysis file (Revised Table C-3). The Coos Bay District maintains a wildlife sightings database and Table WL-2 in the analysis file lists sightings within five miles of project units. Site-specific key habitat features, wildlife species of concern, and documented wildlife sightings are provided below.

### **3.3.1 Threatened and Endangered Wildlife Species**

#### **Northern Spotted Owl**

There are 2 northern spotted owl core areas within the analysis area (Table WL-3 in analysis file) and seven northern spotted owl sites (Table WL-4 in analysis file). NSO Critical Habitat Unit OR-71 is located approximately 4 miles to the east of the analysis area. No units are within 0.25 miles of owl core areas or owl sites (Table WL-5). No suitable owl habitat or dispersal habitat would be removed or degraded. Recent radio telemetry studies in Oregon and Washington, including Coos Bay District, suggest that spotted owls are able to move between local LSR's and that existing LSR's are well connected via dispersal habitat (Forsman et al. 2002 in press).

### **Marbled Murrelet**

There are nine known marbled murrelet nest sites within the N. Fork Chetco and S. Fork Pistol River subwatersheds (Table WL-6 in analysis file). Two units are within ¼ mile of occupied murrelet sites, two units are within ¼ mile of high quality murrelet habitat, and 11 units are within ¼ mile of lesser quality habitat (Table WL-7 in analysis file). There are approximately 3,099 acres of suitable murrelet habitat in the analysis area (Table WL-75 in analysis file). Critical Habitat Unit OR-07-d is within the N. Fork Chetco subwatershed; the closest unit is 0.15 miles away. No suitable murrelet habitat would be removed or degraded.

### **3.3.2 Survey and Manage Species**

Field surveys and corresponding management of known sites would conform to the ROD and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures (USDA & USDI, 2001)

#### **Red Tree Voles**

In 1996 two red tree vole sites were located in T40S-R13W, two miles from the nearest project unit. No red tree vole habitat is within the project units because they are dominated by tanoak, not Douglas-fir (Verts & Carraway 1998).

#### **Mollusks**

There are no known *Megomphix hemphilli* sites within the project area and pre-project surveys are no longer required (USDA & USDI, 2001).

#### **Bats**

No caves, abandoned buildings, or wooden bridges were found that could be providing bat roost sites and would require additional protection under the Survey and Manage ROD. Species that would use these structures and that could occur in the area are fringed myotis, long-eared myotis, long-legged myotis, silver-haired bat, and Townsend's big-eared bat. The thick bark of older trees and bark and cavities in snags within the units could be providing habitat for the 12 bat species that can be found in the southwest Oregon mixed conifer-hardwood forests (Johnson & O'Neil 2001).

### **3.3.3 Other Special Status Wildlife Species**

The following additional Special Status Species may be present in the project area.

#### **Amphibians**

California slender, clouded, Del Norte and southern torrent salamanders are documented as present in the subwatersheds. Tailed, foothill yellow-legged and northern red-legged frogs are documented present. The California slender salamander, clouded salamander, Del Norte salamander, and northern red-legged frogs could be present within project units. The southern torrent salamander, tailed frog, and foothill yellow-legged frogs are highly associated with water and generally would not occur in the dry upland areas where units are located. Western toads are associated with the SW Oregon mixed conifer-hardwood forest and could be present because they can move great distances through dry forests. However, they are most common near and breed in marshes and small lakes, so numbers would be low within project units (Leonard et al. 1993). Decayed down logs (preferably with bark intact) provide habitat for the clouded salamander. Del Norte salamanders were removed from the Survey & Manage list in 2002 (BLM Instruction Memorandum No. OR-2002-064) but they still retain the Special Status species designation (Bureau Sensitive). Surveys in 1993, 1996, 1997, and 1998 located numerous Del Norte salamander sites

within the analysis area and several within project units. Suitable habitat (small talus patches) is plentiful within the analysis area; however, extensive fields of exposed talus were not observed.

### **Reptiles**

The sharptail snake is documented within the analysis area. The current range of the California mountain kingsnake is just east of the analysis area and is known to be present in the Southwestern Oregon mixed conifer-hardwood forests (Johnson and O'Neil, 2001). The units are most likely out of the range of the common kingsnake. The northern sagebrush lizard could be present but may be excluded by the southern sagebrush lizard in extreme southwestern Oregon (Brown et al. 1995). The area is within the range of the western pond turtle though no suitable habitat was discovered in the subwatershed and the minimum 6 inches of duff required for over wintering is not available. All of the above reptiles could occur in project units, but it is highly unlikely that the western pond turtle would occur.

### **Mammals**

Coos Bay BLM records document the presence of western gray squirrels and red tree voles in the analysis area. White-footed voles are generally associated with alder and riparian areas (Verts & Carraway 1998) so are unlikely to be present within units. Also, the Pacific water shrew is probably not present because it is associated with riparian zones and muddy places in forests (Johnson & O'Neil 2001). The analysis area is within the range of the ringtail and suitable habitat exists (Verts & Carraway 1998). Well-developed cavities were observed at the base of large tanoak trees within some units and might provide denning areas for claustrophilic ringtails. It is unlikely that the American marten or fisher inhabit the proposed units due to the lack of conifer in the stands proposed for treatment. Bat species that could occur in the area and listed as Special Status Species are: Yuma myotis, long-legged myotis, fringed myotis, long-eared myotis, silver-haired bat, pallid bat, and Townsend's big-eared bat (BLM Informational Bulletin No.-OR-2000-92).

### **Birds**

In addition to spotted owls and marbled murrelets, the following Special Status birds are documented as present within the analysis area: Cooper's hawk (nesting), northern goshawk (aural detection), red-tailed hawk, golden eagle, peregrine falcon, pileated woodpecker, and purple martin. Though not Special Status species, nests of Cooper's and red-tailed hawks receive a buffer according to the Coos Bay District Resource Management Plan (RMP ROD p. 28). The Cooper's hawk nest was over 2 miles from the nearest project unit. The aural detection of the northern goshawk was outside of any planned project unit and a follow-up survey did not indicate nesting. No suitable nesting habitats for peregrine falcons (cliffs) or golden eagles (cliffs or large trees) are located within project units. Project units currently provide no nesting habitat (snags in open habitat) for purple martin.

The following additional special status species are also associated with the SW Oregon mixed conifer-hardwood forest and could be present if suitable habitat exists within the units: bald eagle, sharp-shinned hawk, Allen's hummingbird, acorn woodpecker, willow flycatcher, western bluebird, and vesper sparrow (Johnson & O'Neil 2001). The vesper sparrow is highly associated with grasslands and the willow flycatcher with willow/riparian areas, so they are highly unlikely to be present in project units because of the lack of those habitats.

### **3.3.4 Special Wildlife Habitats**

The Pistol River Subwatershed supports over 1700 ac. of meadows, including 590 ac. on Siskiyou NF lands (USDA 1998). The NF Chetco Subwatershed supports less than 1000 ac. of meadows (USDI 1997). The proposed treatment units have been established in areas that were not meadows in 1940 (judging from air photos), and have not been identified as potential meadow sites (USDI 1997, USDA 1998). Other unique habitat types within these subwatersheds include open serpentine areas, bogs, ponds, and talus. Rocky knobs and some smaller talus patches (many with litter and soil intermixed) were observed in some treatment units. Open serpentine areas, bogs and ponds were not observed in the treatment units.

### 3.3.5 General Habitat and Wildlife Species

The project units are tanoak dominated stands and provide good forage for wildlife species that use tanoak acorns. Because understory plant species are largely excluded due to overstory shading, low wildlife species diversity would be expected. Species with documented use of acorns (not specifically tanoak) and known to be associated with the SW Oregon mixed conifer-hardwood forest are: black bear, western gray squirrel, Townsend's chipmunk, acorn woodpecker, Steller's jay, and scrub jay.

*Non-migratory Birds* - The following non-migratory birds that are associated with the SW Oregon mixed conifer-hardwood forest are listed in The U.S. Fish & Wildlife Service's (USFWS) list of Species of Management Concern – 1995 (<http://migratorybirds.fws.gov/reports/speccon/tblconts.html>): northern goshawk, spotted owl, red-breasted sapsucker, pacific-slope flycatcher, Bewick's wren, and lark sparrow. *Migratory Birds* - Neotropical migratory birds that may be present in the watershed are listed in the Final RMP (FRMP, Appendix T). Neotropical migratory birds nest at various levels of the forest stands including ground, shrub and canopy level. Most of the units have little or no shrub layer, ground cover, or conifer so currently provide only marginal habitat for most shrub, ground, and conifer nesters. Five migratory species that may be in the analysis area are also on the USFWS list of Species of Management Concern. Those species are: Vaux's swift, rufous hummingbird, Allen's hummingbird, olive-sided flycatcher, and hermit warbler.

## 3.4 Fisheries and Aquatic Habitat

### 3.4.1 Fish Populations, Aquatic Habitat and Riparian Area Condition

#### North Fork Chetco River

The North Fork Chetco River supports populations of fall chinook salmon, coho salmon, winter steelhead, resident rainbow trout, and cutthroat trout. Winter steelhead are the most abundant anadromous salmonids within the subwatershed, with fall chinook and coho salmon being found to a much lesser extent, and only in the lower mainstem portions of the subwatershed. Within the subwatershed, there are approximately 14 miles of anadromous/resident fish bearing waters, and an additional 18 miles of streams that support only resident fish populations. Based on survey data and recent fish passage restoration work, there are no human-caused barriers to resident or anadromous fish in the North Fork Chetco River.

Within the North Fork Chetco subwatershed, there are 17 units, totaling 236 acres, proposed for hardwood conversion treatments. Of this total treatment area, roughly 37 acres (16%) are located within Riparian Reserves. Individual units vary in their proximity to fish bearing streams, with distances ranging from 180 feet to over 2 miles. Only 2 units (Units 8 & 9) are directly adjacent to a fish bearing stream. Due to the high gradient nature of the streams within the North Fork Chetco, coho salmon are limited to the lower portions of the subwatershed. As a result, individual units are located well upstream of critical habitat for this species, with distances ranging from 0.6 to over 4 miles away.

Within the Northwest Forest Plan, the North Fork Chetco River is a Tier 1 Key Watershed. This designation only applies to the Federally managed portion of the land within the North Fork Chetco, which comprises roughly 36 percent of the subwatershed. As a Key Watershed the North Fork Chetco is intended to serve as a refuge that is crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species (NWFP, ROD, p. B-18).

The existing condition of the aquatic habitat in the North Fork Chetco River can be characterized as being resistant to change. Virtually all of the mainstem stream channels are well armored with bedrock, boulders, and cobble. This situation is reflective of the flashy, high flow nature of the flow patterns in this region. Stable large wood is relatively rare due to large channel sizes, extreme flow conditions during winter storms, and limited conifer source areas. Based upon large wood levels recorded in channels believed to be near "reference" conditions, large wood is thought to be sparse naturally.

Within the proposed units, stand conditions adjacent to drainage features are generally similar to those seen in upland areas.

### **South Fork Pistol River**

The South Fork of the Pistol River supports populations of fall chinook salmon, coho salmon, winter steelhead, migratory cutthroat trout, and resident rainbow and cutthroat trout. Fall chinook and winter steelhead are the most abundant anadromous fish in the watershed, with coho salmon being found in much smaller numbers. Historical numbers of coho are thought to have been relatively small in most south coast watersheds, including Pistol River. Coho populations in Pistol River were probably smaller than chinook populations due to the relatively steep topography that leads to a steep, confined, and high-energy system (ODFW, 2001)

Within the South Fork Pistol River subwatershed, there are 3 units, totaling 87 acres, proposed for hardwood conversion treatments. Of this total treatment area, roughly 17 acres (20%) are located within Riparian Reserves. These units range from 0.7 to 0.9 miles away from fish bearing streams. No units are directly adjacent to a fish bearing stream. The fish distribution in the South Fork Pistol is similar to that of the North Fork Chetco, high gradient stream channels limit coho salmon to the lower portions of the subwatershed. As a result, individual units are located well upstream of critical habitat for this species, with distances ranging from 0.7 to 0.9 miles away.

The existing condition of the aquatic habitat in the South Fork Pistol River can be characterized by splitting the subwatershed into two regions – the upper South Fork and the lower South Fork. The upper South Fork Pistol is very similar to the North Fork Chetco River. In this area, virtually all of the larger stream channels are well armored with bedrock, boulders, and cobble. These channels would be classified as Rosgen A and B type streams (Rosgen, 1994). Stream channels with these characteristics are extremely resistant to change. Stable large wood is relatively rare due to large channel sizes, extreme flow conditions during winter storms, and a history of riparian harvest and stream clean-out activities.

The lower portion of the South Fork Pistol is characterized by its lower gradients, well-established floodplain, and large proportion of gravel substrates. In general, these areas are more sensitive to changes in the sediment regime, peak flows, and other factors potentially influenced by land management activities in the watershed. Larger stream channels in these areas would be classified as Rosgen C type channels. These low gradient reaches tend to coincide with lands used for agricultural purposes – primarily grazing in the Pistol River system. As a result, riparian areas historically dominated by stands of conifer and hardwood species have been converted to areas dominated by smaller shrubs and pasture grasses. This transition, coupled with an increased fine and coarse sediment load from upstream land management activities, has resulted in the loss of stream bank stability and gradual channel widening. Once these low gradient channels become over-widened, they lose the ability to transport sediment effectively. This over-widened state may last indefinitely without a change in land management (and consequent recovery) along these low gradient reaches of stream. During recent stream surveys, unusually large width/depth ratios, a lack of large woody material, and ocular estimations of large amounts of fine sediment in these areas suggest that habitat oversimplification, pool filling, and gravel embeddedness may be having negative impacts on salmonids.

Within the proposed units, stand conditions adjacent to drainage features are generally similar to those seen in upland areas.

### **3.4.2 Threatened and Endangered Species and ESA Consultation**

The entire analysis area is within the Southern Oregon Northern California (SONC) Evolutionarily Significant Unit (ESU) for coho salmon, a federally listed Threatened Species. Impacts to this species and Designated Critical Habitat have been addressed in consultation with the National Marine Fisheries Service. All mandatory terms and conditions from the NMFS March 18, 1997 Biological Opinion have been or will be incorporated in accordance with the Endangered Species Act.

All of the hardwood conversion units proposed in this action are located a substantial distance upstream from coho critical habitat (from 0.6 to 4 miles), are located on relatively gentle slopes (10-60%), have no-treatment buffer zones to maintain shade/water temperature/LWD, slope and bank stability, and filter sediments potentially mobilized as a result of the proposed treatments. Therefore, it is unlikely that treatment of these units would result in significant impacts to listed fish species or their habitat.

### **3.4.3 Essential Fish Habitat**

The analysis area contains “Essential Fish Habitat”, as defined in the Magnuson-Stevens Act. The proximity of proposed units to essential fish habitat ranges from a 0.6 mile, to over 4 miles. Based on this information, and the analysis contained within this document, the hardwood conversion activities proposed would not affect essential fish habitat.

The Biological Assessment used for ESA consultation is located in Fisheries analysis file.

## **3.5 Climate**

Annual precipitation occurs mostly as rainfall in the analysis area, varying strongly with elevation. Annual average precipitation can vary from 90 inches in the lower areas of the watersheds to near 140 inches in upper elevations. Two year, twenty-four hour recurrence interval storm depths vary from 5.5 to 6.5 inches. The orographic lifting of moist air masses and subsequent condensation at higher elevations results in greater amounts of precipitation at those elevations. Aspect and drainage orientation to prevailing winter southwest winds also influence precipitation amounts. The North Fork Chetco watershed is orientated towards the Southwest and is very exposed to winter storms, while the South Fork Pistol is orientated towards the North and West and receives somewhat less precipitation. Cool, moist air masses lifting over the Coast Range can produce snow at elevations over 2000'. These are intermittent snow packs, which usually persist on the ground for only a few days to weeks and sometimes melt quickly with warm winds and rain. This extra water storage as snow water equivalent can elevate runoff.

## **3.6 Soils**

The analysis area is located in the Klamath Mountain physiographic province. The geologic materials associated with the soils of the area are developed from the late Jurassic Dothan formation. The Dothan formation consists chiefly of interbedded dark greywacke sandstone, mudstone and shale. Locally, pebble and cobble conglomerates, bedded cherts and volcanics occur. Within the Dothan Formation, the Macklyn Member dominates in the analysis area. It consists primarily of sandstone, mudstone and siltstone with appreciable volcanic rocks and some chert and conglomerate. Exposures of this formation are visible in the cutbanks along the Chetco River Road, the Gardner Ridge Road and the Agnew road, which parallels the North Fork of the Chetco River. In addition the non-ellipsoidal Volcanics member of the Dothan formation occurs in distinct belts between Gardner Ridge and the Carpenterville Road in the vicinity of Colgrove Butte just west of the analysis area. It consists of lava, breccias and conglomerate rocks. Prominent exposures are visible at Palmer Butte, Bosley Butte and Morton Butte.

The soils found within the proposed units are Fritsland-Bravo-Cassiday complex, on 30 to 60% north and south facing slopes, Skookumhouse-Hazelcamp-Averlande complex on 0-15% or 15 to 30% slopes, Crutchfield-Colepoint complex on 15-30% slopes. All soil map unit data is only available from the National Resource Conservation Service (NRCS) in an online form. No published soil survey has been compiled for this county that covers the analysis area. The basis for analysis in this document is the information provided by the NRCS and, as preliminary information, may be subject to change in a final published document. Map unit limitations for management activities generally guide the land user towards those actions that would be of greatest benefit when undertaking active land management for the purposes of growing commercial trees or agriculture.

Soil map units have standard ratings for several common elements. These can be found on Table 1 in the Soils Analysis file. Overall, most soils in the conversion units are low in moisture in the growing season,

highly erosive when exposed after vegetation removal in combination with high rainfall events, have high rock contents and are well drained but have moderate to slow permeability, are shallow in depth, subject to compaction when wet, and subject to competition by tanoak and brush species.

A continuous grade from ridge to creek bottom is the exception, rather than the rule, within the analysis area. The general NRCS descriptions of these map units place them on 30 to 60% slopes. However, the benchy nature of the hillslope within the treatment units creates slopes that range from 60% to nearly level. Landslides are not a major landscape feature and past analysis in the North Fork Chetco watershed shows in-channel bank failures to be the dominant erosional process. Russell (1994) determined that within the South Fork Pistol watershed there is a decreasing trend in sediment production from landsliding in both managed and forested areas. In the past, there have been high amounts of sediment delivery when large precipitation events combined with large harvest levels (1940-70s). The absence of large storm events combined with better land use practices later (1980-90s) may be reflected in the decreasing trend of sediment delivery.

Mobilization of the fine sediment component within the upper soil horizon can be expected after removal of the protecting canopy and after burning activities. The Cassiday, Fritsland and Grouslous soil types are the most susceptible to erosion as reflected by the NRCS erosion-hazard rating that ranges from moderate to very severe. In addition, these soils have moderate to moderately slow permeability ratings that restrict surface water infiltration and increase runoff.

### 3.7 Road Density

The current calculated federal road density on lands within the two subwatersheds containing the analysis area is based on the GIS data available as of January 7, 2003. The procedure for calculating federal road density is described in Information Bulletin No. OR-2000-134. The current North Fork Chetco federal road density is 1.75 miles/ square mile and the South Fork Pistol federal road density is 1.41 miles/ square mile of Federal Ownership. In contrast, the road density for other ownerships is 5.3 mi/mi<sup>2</sup> within the N.F. Chetco and 3.34 mi/mi<sup>2</sup> within the S.F. Pistol subwatershed. All roads in the project area are gated and locked at all times, except during logging operations by private owners and during a brief period of hunting season in the fall (dependent on fire restrictions).

### 3.8 Hydrology

The Chetco and Pistol River watersheds are near the southern end of the 1,093 square mile South Coast Basin, within the Southwest Oregon Province. The area can be further divided into subwatersheds and drainages (see Table 2). The REO 5<sup>th</sup> –field name and number for the Pistol River is 171003120402 and the North Fork Chetco is 171003120202.

**Table 2**

Drainage (7 <sup>th</sup> Field)	Area (Acres)	Units Within Drainage
Upper South Fork Pistol (6 <sup>th</sup> field)	16,295	P2-P4
Upper North Fork Chetco	6,553	12-21,22,24
Morton Butte	5,300	10,11
Bravo Creek	7,639	23,24,25
Lower North Fork Chetco	6,070	5-9

### **3.8.1 Stream Characteristics**

#### **Stream Flow**

Stream flow patterns correspond to seasonal rainfall patterns. The watersheds are rain dominated. Winter stream flow responds quickly to precipitation events, with creeks having sharp increases in flow within just a few hours. Many soils are shallow to moderate in depth and transmit water readily. Bedrock transmits water slowly. Summer stream flows in the analysis area are low (in the range of 0.25 cfs/mi<sup>2</sup>). Channels within the proposed treatment units are dry in the summer. A few spring/seeps do occur within the proposed treatment units.

Overland flow, resulting in sheet erosion and formation of rills and gullies, can occur in certain areas of the analysis area with big winter rainstorms. These areas include compacted sites such as roads and landings, and areas burned with moderate to high fire severity, and bare areas. Most gullies are discontinuous, although some have connected with the stream system.

The transient snow zone (elevations above 2000 feet) is found in 5% of the North Fork Chetco and 13% of the Pistol River watershed. This area is periodically more susceptible to slightly increased runoff.

Many upper watershed stream channels are high-energy, moderately erosional, streams with steep gradients. This includes all the treatment units. Middle watershed streams have moderate to steep gradients and flow through steeply incised inner gorges. Lower watershed streams have depositional areas and some floodplain development.

Past and ongoing forest management may have a slight effect on advancing the timing of flows in the analysis area because of roads, compaction, changes in evapotranspiration rates, and harvesting in rain-on-snow zones.

### **3.8.2 Water Quality**

#### **Sediment**

Water can be turbid during storms but will recover quickly. Deposition of fine sediments (<2mm) does not over accumulate in North Fork Chetco low gradient reaches outside the analysis area (USDI 1997). The Pistol River Watershed Analysis (USDA 2002) has noted fine sediment accumulation and embeddedness in low gradient reaches outside the analysis area.

The Pistol River watershed and North Fork Chetco subwatershed are recovering with respect to sediment delivery and channel movement processes, since the 1955, 1964, and 1971 floods when major inner gorge landslides and channel widening occurred. Past sediment delivery was no doubt heightened by poor forest management practices that are not undertaken today such as roadside cast construction, undersized culverts at stream crossings, and tractor logging on steep slopes. Sediment production in the Pistol River watershed reached a peak about 1970 and has been declining since (USDA 2002). The North Fork Chetco subwatershed does not show evidence of aggradation as fine sediments (<2mm) are moved downstream during frequent normal to high flows (USDI 1997).

#### **Stream Temperature**

Both the Pistol River and lower North Fork Chetco River exceed the state's temperature standards and are listed as water quality limited. Stream temperature should continue to improve as riparian forests increase in height, recovering from past logging, salvage, streamside road building, and fires.

### 3.8.3 Channel Condition and Large Wood

Channels in the analysis area that are in close proximity to the treatment units would be classified as Aa1+-A5a+ (Rosgen, 1994) or Bedrock or Cascade channels (Montgomery and Buffington, 1993). They are typically steep gradient channels that either are on bedrock or are floored by coarse alluvium. The channels are well defined. Under normal flow response, these channels will not change their bed or bank configuration. These are transport channels and any sediment conveyed to them is routed quickly downstream. In-channel sediment storage is limited, being confined to a few obstructions such as organic material, rocks, or other gradient breaks. Under normal flow conditions sediment delivery is low and not much sediment moves as these channels are supply limited. Under infrequent, but very high flow scenarios (flooding) the bed and banks will change dimensions and in-channel sediment will be accessed, as well as inputs from the hillslopes. Furthermore, super critical flow during flooding conditions, will cause headcuts to move upstream if the channel is not on bedrock. During flooding, channels will expand into unchanneled areas and there may be some debris torrents. Large wood, either hardwood or conifer, is very sparse in these channel types.

## 3.9 Botany

Surveys were completed as necessary and in accordance with the Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and other Mitigating Measures Standards and Guidelines and its Record of Decision. Surveys were done for those species requiring pre-disturbance surveys as identified in the 2001 Annual Species Review (see BLM Instruction Memorandum No. OR-2002-064).

Vascular plant species diversity is low in all units; however, saprophytic plant species are well represented. The most common saprophytic species are ground cone (*Boschniakia strobilacea*), spotted coralroot (*Corallorhiza maculata*), gnome plant (*Hemitomes congestum*), and California pinefoot (*Pityopus californicus*). The shrub and herb layer is very widely spaced in most units, with scattered bear grass (*Xerophyllum tenax*) being the most commonly encountered species. Patches of rhododendron (*Rhododendron macrophyllum*), salal (*Gaultheria shallon*), and evergreen huckleberry (*Vaccinium ovatum*) are found in units that are lower on the slope and had a more pronounced coastal fog belt influence. Grass species are virtually absent except on the edges of units that are adjacent to roads. In general, both lichen and bryophyte species diversity is low. The greatest diversity of these non-vascular plant species occurred on and around the Douglas-fir trees present in some units and in areas with more moisture available such as intermittent and ephemeral streams or seasonally wet areas. The down wood component of these units appears to be very dry much of the summer and supported few bryophyte species.

### 3.9.1 Threatened & Endangered/ Survey & Manage Species/ Special Status Species

A pre-field review of Survey and Manage Categories A & C and for Special Status Species was completed prior to actual field surveys. Only Survey and Manage Species and Special Status Species found within the range and with habitat present in the analysis area were field surveyed.

No threatened or endangered plant species were identified as known or suspected in the project area. Field surveys for Survey and Manage Category A & C plant species (vascular plants, lichens, & bryophytes) and BLM special status plant species (Bureau Sensitive and Bureau Assessment species) were done according to approved survey protocols. Although one Survey and Manage plant species was identified within the analysis area (adjacent to Unit 15), no Survey and Manage or Special Status plant species were located within any of the proposed treatment units.

## 3.10 Port-Orford-Cedar

No POC exists within any of the proposed units, no POC was seen on any adjacent stands or plantations on BLM lands, no POC was seen on any private lands within the analysis area, and none of the roads in the analysis area had any POC.

### 3.11 Sudden Oak Death

Sudden Oak Death (SOD) (*Phytophthora ramorum*) is a new disease, first discovered on tanoaks near Mill Valley, CA in 1995. Since that time SOD has spread to several counties in California around the San Francisco Bay area, extending to the southern part of Humboldt County. During the fall of 2001, SOD was detected in Curry County, near Brookings, Oregon on nine sites, mostly in the Joe Hall Creek area totaling approximately 40 acres. As of November 2002, eleven new sites were identified (totaling 9 acres) within the quarantine area and near the original nine sites (Kanaskie et.al. 2002). Three of the known sites were found on BLM lands adjacent to private lands, access to this area is currently restricted by gates. The initial nine infections sites were slashed and burned in 2001 in an effort to eradicate the fungi. Treatment and monitoring are underway on the eleven new sites. All sites are being monitored by the Oregon Department of Agriculture to ensure eradication measures were effective and to initiate any follow-up treatments.

All three sites found on BLM lands were not adjacent to any roads or had evidence of human activity. One site on private land had active evidence of ATV use (pers. obs). Approximately 2.5 acres of BLM lands were treated for SOD infections and the pathogen was eradicated.

How the disease spreads is not completely understood; evidence suggests that it may be transferred in rain splash and wind driven rain as well as in soil and plant material that is moved from place to place. There is no clear understanding on how SOD came to Curry County. Researchers are looking at wind, insects, and birds as the vector used to introduce the disease into Oregon (ODA, 2002). Past reports of increased disease infections have come after extraordinarily wet winters caused by El Nino (Freinkel, 2002).

Other causes of tanoak mortality are *Armillaria sp.* and *Phytophthora nemarosa* associated with single trees or clumps of 2 or 3 dead tanoaks (Goheen et al. 2002). These diseases appear to be more associated with older trees (per. conver. Goheen. 2002).

A quarantine area was established that encompasses approximately 9.5 square miles to include all the Oregon SOD sites. Movement of all host materials is restricted from within this area however; this does not limit the removal of Douglas-fir logs (no Douglas-fir branches are to be removed). All soil movement out of the regulated area that is associated with host rootstock and is restricted. The following are hosts that are found in the Curry County area: bigleaf maple, madrone, manzanita, rhododendron, evergreen huckleberry, tanoak, Canyon live oak, Oregon myrtle, California coffeeberry, Poison Oak, Coast redwood, and Douglas-fir. The following hosts are killed outright by SOD: tanoak, Canyon live oak, rhododendron, and evergreen huckleberry. Other host species are not killed outright but they may have leaf spots, or cankers. Coast redwood and Douglas-fir symptoms include needle and tip blight. Douglas-fir saplings were only found infected on one site in California (Yang, 2002).

The recent 2002 aerial survey for SOD and ground verification procedures have found no new sites on BLM lands or outside of the SOD Quarantine area. All new sites have been closely associated with previously identified sites on private land.

### 3.12 Noxious Weeds

No noxious weeds were observed on BLM lands and roads. Pampas grass and Scotchbroom were seen on private lands and along roadsides along the Carpenterville County road and the start of the Henderson road.

### 3.13 Recreation

There is no public access to federal lands within this project area, due to private control of all roads accessing the area.

### **3.14 Cultural Resources**

Within this project scope, conversion unit are generally located on steep hillsides, benches, and streamside terraces.

Potential prehistoric resources include localities related to settlement (camps and villages) and resource extraction (hunting, fishing, and gathering). One of the major factors in settlement location is believed to be access to fresh water during the dry early fall acorn gathering season.

Class I survey (records check) did not identify any historic resources in the vicinity of project units. Likewise, no prehistoric resource locations were identified in the vicinity of project units by a records check.

Reconnaissance level field surveys were conducted in areas with potential cultural resources. This survey confirmed the report of a prehistoric cultural resource location within Unit #11 adjacent to a spring (unit 11 was deferred from treatment). Survey was conducted during the early fall dry season and this spring, as well as several others noted in the unit, was producing fresh water at the surface. No additional historic or prehistoric cultural resource locations were discovered during field survey.

### **3.15 Solid and Hazardous Materials**

Project development personnel have performed Level I surveys on proposed work locations. No recognized environmental concerns have been identified, although one site was found in Unit 5 that consists of discarded chainsaw plastic oil containers (empty), likely to be the result of past silvicultural contracts. The district hazardous materials specialist as needed would investigate further identification of concerns.

### **3.16 Environmental Justice**

The proposed area(s) of activity is not known to be used by groups protected by environmental justice legislation. These groups include Native Americans, and minority (or low-income) populations. The Bureau of Land Management concludes that no disproportionately high or adverse human health or environmental effects would occur to the protected groups because of the proposed action(s). Therefore, Environmental Justice would not be further analyzed in this document.

## **4.0 ENVIRONMENTAL CONSEQUENCES**

### **4.1 Effects on Vegetation and Forest Ecology**

#### **4.1.1 No Action - Vegetation and Forest Ecology**

Direct: In the absence of treatment or disturbance in these potential treatment units, units would maintain a very widely spaced overstory of mature (> 16") Douglas-fir (< 5 TPA), an extremely dense (>1200 TPA) tanoak understory, and sparse, shade-tolerant shrub and herbaceous components.

Indirect: Without treatment, stands in these units would remain in the biomass accumulation/competitive exclusion stage (Franklin et al. 2002). The tanoak stands would continue to grow and occupy sites suitable for conifer. Tanoak competition would limit conifer establishment and growth, thus slowing (or forestalling) the development of late-seral conditions (USDA USDI 1995). Tanoak is able to persist throughout stand development, from stand initiation through old growth, due to its burl production/sprouting and shade tolerance (Jensen et al. 1995). In mid-seral and older stands, tanoak

develops multi-stemmed trees as well as becoming common as an understory component, forming an even-aged diameter distribution (Jensen et al. 1995). Individual tanoak stems and dominant overstory Douglas-fir would increase in diameter and height. Understory Douglas-fir would have low growth rates (USDA USDI 1995). Douglas-fir would become established or released only in sizeable gaps caused by windthrow or after fire. In the absence of a disturbance, additional conifers would be unlikely to become established under a fully stocked tanoak stand. Most understory conifers would be suppressed or would suffer competition-related mortality and few would emerge above the tanoak understory (Tappeiner et al. 1992).

Without treatment or disturbance, tanoak canopy cover would continue to limit light reaching the forest floor. This lack of light would limit shrub and herb cover and selects primarily for shade-tolerant species like evergreen huckleberry and sword fern. Through stand development, some gaps in the tanoak canopy would form, allowing vegetation in lower layers to increase in vigor (Oliver 1990). These gaps would allow establishment of less shade-tolerant species (e.g., wood rose (*Rosa gymnocarpa*) and vanilla leaf (*Achlys triphylla*)).

Conifer green tree structure would remain low (< 5 TPA) in these units. Unmanaged mid-seral stands typically have the lowest levels of snags and down wood of any sere (Franklin et al. 2002), particularly in the Klamath Mountains Province (Bingham and Sawyer 1991). The few remaining Douglas-fir in these units would provide down wood and snag structure as they senesced. Older senescing tanoak would also provide some structural elements, including snags with cavities. Tanoak would provide minimal competent down wood.

Cumulative: Tanoak-dominated stands are not limited in the Klamath Mountains Province (Johnson and O'Neil 2001). In the absence of fire or management, the amount of tanoak-dominated stands in the analysis area would remain above historic levels. Tanoak domination has been identified as a significant problem in this province (USDA USDI 1995, USDA 1998).

#### **4.1.1.1 Down Wood and Snags**

Direct and Indirect: Without treatment, stand structure associated with dead and dying trees would remain relatively low. Structure would be provided primarily by senescing overstory Douglas-fir (currently < 5 large trees/ac.). Older senescing tanoak would provide some structural elements, including snags with cavities and perching habitat. The range of cavity types, sizes, and bark foraging opportunities provided by these tanoak stands would be limited compared to Douglas-fir. In the treatment units, tanoak would provide minimal competent down wood. Douglas-fir recruitment would be low in these mid-seral stands, resulting in decreases in stand structure as existing conifer snags and down wood rotted, with few new conifers entering down wood and snag pools.

Cumulative: Down wood and snag densities in natural stands in the Klamath Mountains Province (Bingham and Sawyer 1991) are lower than natural stands in other westside forests (Spies and Franklin 1991). In the analysis area, a large and increasing proportion of private ownerships are in managed early-seral condition, with no legacy structures. Potential treatment units in the analysis area currently have low levels of down wood and snags. The no action alternative would result in a minimal increase in down wood and snags in the analysis area as stands in the potential treatment units entered the vertical diversification stage of development (Franklin et al. 2002). Thereafter there would be minimal production of down wood and snags from conifer senescence.

#### **4.1.2 Proposed Action - Vegetation and Forest Ecology**

Direct: Treatment would include the removal of smaller tanoak (< 20") and Douglas-fir (< 16") understory in 322 ac. of the analysis area. Broadcast burning would also kill much of the Douglas-fir overstory in this treatment area. Site preparation and planting would replace tanoak stands with young conifer stands. Removal of tanoak and site preparation would temporarily reduce herb and shrub cover, reducing interspecies competition enough to allow successful conifer regeneration and establishment and increasing light reaching the forest floor.

Indirect: Mature tanoak trees provide structural values for wildlife including acorn production and dense hiding cover (Jensen et al. 1995) as well as cavities and some perching habitat. Treatment in these units would affect these functions. Tanoak would persist in the treated units (Harrington and Tappeiner 1997). Retained tanoak stems (> 20") that survived broadcast burning would continue to produce acorns and increase stand structural diversity (canopy layers). Sprouting tanoak from burls would continue to provide dense hiding cover in some portions of most treatment units and some acorn production within a few years (Jensen et al. 1995). Tanoak stems (> 20") killed but not consumed during broadcast burning would greatly increase cavities and perching habitat in the treatment units for some time. It is unlikely that tanoak provides the quantity and diversity of cavities, down wood, snag, and other habitat attributes associated with large dead and dying conifers, which would eventually occupy portions of the treatment units.

Design features would designate structural diversity trees and attempt to reserve these from burning. These trees, and additional over story conifers ( $\geq 16"$ ) not killed during broadcast burning or blowdown, would greatly contribute to the living structural diversity (canopy layers) of the new stand. Most of this structural diversity would be retained in subsequent harvests. Planted conifers would eventually become large enough to contribute to green tree retention goals for the units (USDI 1995). Areas within riparian reserves and areas of green tree retention would be set on a successional trajectory to develop late-successional characteristics including dominance by large conifers (USDA USDI 1995).

Treatments would change the shrub and herb composition in these units, favoring species on the site that can regenerate asexually, pioneer, and ruderal species (e.g. blackcap (*Rubus leucodermis*), bracken (*Pteridium aquilinum*)). As planted conifers matured, forest floor species would also change towards species associated with dry, light-limited, early- to mid-seral stands (e.g. Hooker's fairybells (*Disporum hookeri*), bear grass).

Cumulative: The proposed action would decrease the amount of unmanaged, mid-seral stage tanoak-dominated stands in the analysis area by 322 ac., and increase cover by young conifer stands by a like amount. This type of tanoak community is not limited in Federal or private ownership in the analysis area (Figure EF-1, Figure EF-2) or in Federal ownership within the surrounding watersheds (USDI 1997, USDA 1998). Fire suppression in the tanoak series has led to dense, senescent tanoak stands across a large portion of the Klamath Mountains Province (USDA USDI 1995). Tanoak cover in the analysis area is at the high point in its range of variability (USFS 1998) due to fire suppression, resulting in a reduction in coniferous overstory from historic conditions. In the tanoak series, replacement of mid-seral tanoak communities with young Douglas-fir communities represents a modification of successional pathways which may be no more out of the historic range of natural variability than suppression of disturbance (the no action alternative). Tanoak conversions would potentially increase the habitat suitable for late-successional/old-growth associated species and decrease habitat used by tanoak associated species.

Proposed activities within the analysis area include limited federal action and continued private harvest and conversion of tanoak communities. BLM currently plans no regeneration harvest and has no plans for hardwood conversions in the analysis area, within the next 10 years. BLM maintains over 1,800 ac. in LSR designations in the analysis area (**LUA Table** in the Forest Ecology Analysis File). These areas would be maintained to enhance habitat suitable for late-successional/old-growth associated species as well as significant tanoak communities. The Siskiyou NF has no plans to do regeneration harvest or hardwood conversion in the analysis area in the foreseeable future. Based on past management practices, it is anticipated that private industrial landowners would clear-cut approximately 200 acres of mixed-evergreen habitat per year in the analysis area and replace it with young conifer stands.

#### 4.1.2.1 Down Wood and Snags

Direct: Existing down wood would be removed from treated areas by broadcast burning. This loss of structure would not be great since existing down wood levels are low (< 10 pieces/ac.) and mostly in advanced decay classes (pers. obs.). Existing snag density in treatment units is also very low (< 5 snags/ac.) with few large conifer snags in decay classes 1 and 2 (pers. obs.).

Indirect: Design features would attempt to reserve some structural diversity trees from burning. A number of these structural diversity trees, as well as some conifers (> 16") and numerous large tanoaks (> 20"), would be killed during treatment. These dead trees would dramatically increase the number of snags in these units. Efforts to perform only low- to moderate-intensity (winter and spring) burning would ensure that many created snags retained some bark and limb structure, increasing their utility and longevity. The temporary loss of down wood associated with broadcast burning would be offset by large increases in down wood pools associated with burned overstory trees in the treated units. Created snags would eventually enter the down wood pool, many of them in low (competent) decay classes.

Cumulative: The majority (72%) of the analysis area is in private ownership managed primarily in early-seral condition with few legacy structures. The remainder (28%) is in BLM ownership with many acres of mid-seral stands with low levels of legacy structures. The proposed action would greatly increase the number of large snags (initially) and down wood (eventually) on 322 ac. within the analysis area. Some of these snags and down wood components would survive future harvest and remain onsite due to retention requirements (USDI 1995).

## **4.2 Effects on Wildlife and Associated Habitats**

### **4.2.1 No Action – Wildlife and Associated Habitats**

#### **4.2.1.1 All Species**

Direct Effects: Wildlife species diversity would remain low in these tanoak-dominated stands. Population densities of species dependent upon conifer snags and coarse woody material would remain low. Inadvertent disturbance to marbled murrelets or northern spotted owls due to noise or smoke would not occur. There would be no risk to adjacent murrelet or spotted owl suitable habitat. Del Norte salamander sites would not be degraded.

Indirect Effects: Dispersal habitat for spotted owls would not increase in the foreseeable future. Conifer snags or down wood would remain at current low levels in the foreseeable future without a major disturbance event. The no action alternative would not increase habitat for species that benefit from brush piles, fire disturbance, or forest openings.

Cumulative Effects: The trend of conversion from tanoak-dominated stands to conifer stands in private holdings would continue, coupled with a trend in federal ownerships of maintenance of existing tanoak-dominated stands. This would lead to a shift of tanoak-associated species to federal lands and a decrease on private lands. Wildlife species associated with early seral conifer stands would be expected to increase on private lands.

### **4.2.2 Proposed Action – Wildlife and Associated Habitats**

#### **4.2.2.1 All Species**

Direct Effects: The burning and removal of most of the forest canopy, existing snags and down wood, and duff layer would negatively affect individuals but not substantially affect populations of species within the units through direct mortality, immediate loss or degradation of nesting/denning areas (trees, brush, existing snags, chimney trees, rocky areas) and alteration of the microclimate. The slash piles would provide some temporary habitat to species that use brush. Effects to specific species are discussed below.

Indirect Effects: Species which use snags and down wood, fire-created openings, and young and mid-seral forest would benefit. Benefits would depend upon site-specific conditions such as: burn intensity, which affects the quality and extent of bark retention on snags and down wood, and the availability of adjacent healthy wildlife populations to re-colonize sites. Smoke and noise disturbance could occur to species in stands adjacent to project units. Effects to specific species are discussed below.

#### **4.2.2.2 Threatened and Endangered Species**

Consultation with the U.S. Fish & Wildlife Service (USFWS) is currently in progress for this and similar district-wide projects. This project would adhere to all project design feature (PDF's) presented in the Biological Assessment for Forest Removal & Modification Projects (FY2003-2004) and the resulting final Biological Opinion, when issued by the USFWS.

##### **Northern Spotted Owl**

Direct Effects: The hardwood conversions would not remove or degrade suitable habitat, but there is a small risk of unintentional removal/degradation of suitable habitat if control of the fire was lost during fuels management. Although there are no known owl sites within ¼ mile of any project units, noise and/or smoke disturbance could occur if owls are using suitable habitat near units. No dispersal habitat would be removed because stands do not meet dispersal habitat minimums (average dbh > 11", canopy cover > 40%)

Indirect Effects: The development of the units as spotted owl dispersal habitat would be delayed; but because dispersal habitat currently allows for movement between LSR's (Forsman et al. 2002), effects would be negligible or non-existent.

##### **Marbled Murrelet**

Direct Effects: The hardwood conversions would not remove or degrade suitable habitat, but there is a small risk of unintentional removal/degradation of suitable habitat if control of the fire was lost during fuels management. Disturbance due to smoke could also occur. The short-term impact of potential noise disturbance on the occupied marbled murrelet sites and high quality suitable habitat would be mitigated by the appropriate seasonal and daily timing restrictions from the USFWS Biological Opinion (2002). If murrelets were using low or moderate quality habitat, disturbance from noise and/or smoke could occur during the nesting season if recommended (but not mandatory) project design features were not followed.

Indirect Effects: No indirect effects were identified.

#### **4.2.2.3 Survey and Manage Species**

No direct or indirect effects are anticipated to occur to any species currently designated Survey & Manage, because there is no suitable habitat and/or there are no known sites (red tree vole or Megomphix hemphilli) within project units.

#### **4.2.2.4 Other Special Status Species**

##### **Amphibians**

Direct Effects: The known Del Norte salamander sites within the units would be negatively affected by the burning of slash. Severity of impacts would depend on fire intensity and season of burn. All streams would be buffered, but tailed frogs and southern torrent salamanders could be subjected to a short-term increase in sedimentation and stream temperature due to the removal of forest cover in intermittent channels upstream.

Indirect Effects: Down wood is an important foraging, nesting and cover component for California slender and clouded salamanders (Johnson & O'Neil 2001). They could benefit from increased down wood assuming bark is not fire-hardened or removed during burning.

## Reptiles

Direct Effects: Sharptail and California mountain king snakes could benefit from the open areas created after burning. Northern sagebrush lizards, if present, could benefit from slash piles and open areas created.

Indirect Effects: Sharptail snakes and California mountain king snakes could benefit from increased down wood levels.

## Mammals

Direct Effects: The immediate loss of existing snags could negatively affect the following special status mammalian species: Yuma, long-legged, fringed and long-eared myotis; silver-haired and pallid bat; and ringtail. The decrease in existing down logs could negatively affect the Pacific water shrew and ringtails. The American marten, if present, could benefit from slash piles created prior to burning. Western gray squirrels are negatively affected by the removal of oak forests, but tanoak is a common component of adjacent stands, so it is highly unlikely they would be impacted by this project.

Indirect Effects: Conversely, the above snag and down wood associated species would benefit from future increases in snags and down wood.

## Birds

Direct Effects: The immediate loss of existing snags could negatively affect the following special status bird species: northern goshawk (plucking posts), red-tailed hawk, golden eagle, acorn woodpecker, hairy woodpecker, pileated woodpecker, olive-sided flycatcher (perches), purple martin, and western bluebird. The decrease in existing down logs could negatively affect the northern goshawk and pileated woodpecker.

Indirect Effects: The replacement of an open understory with a dense stand could negatively affect the northern goshawks that typically prefer open woodlands (Ehrlich et al. 1988). Allen's hummingbird nests in thickets and brushy slopes (Ehrlich et al. 1988) could benefit during that stage of the new forest's development. The pileated woodpecker is the primary cavity excavator in the area and would benefit from an increase in snags. Purple martin and western bluebird are highly associated with snags in open fields for nesting (Ehrlich et al. 1988) and would likely benefit quickly from an increase in snags, but all snag-associated species listed above could also benefit. The olive-sided flycatcher, Allen's hummingbird and western bluebird could benefit because they are associated with post-fire habitats (Johnson & O'Neil 2001).

### 4.2.2.5 General Habitat and Wildlife Species

Direct Effects: Because tanoak is still widely distributed throughout the subwatersheds, species that use this habitat would not be measurably impacted by this project. Ungulates would benefit from increased forage, but decreased cover would offset some of that benefit. In the Pacific Northwest, migratory birds typically arrive from late April to early May, are breeding by late May, are fledging young in July and August, and have departed sometime in late August or early September for their wintering grounds (Tim Rodenkirk, pers. com.). Birds nesting in the treatment units at the time of cutting will lose all or part of their nesting effort for that season. Impacts to breeding birds will be minimal because almost all units will be cut in late winter and early spring (January-April).

Indirect Effects: Eventually a mixed conifer forest will provide habitat and cover for species associated with conifer forests. At the mid-seral stage of development, plant species diversity is expected to increase and, therefore, provide a wider range of habitat types than are currently available.

*Non-migratory Birds* - As canopy nesting birds, northern goshawk and pacific-slope flycatchers may benefit in the future from the establishment of conifer. Bewick's wren may benefit from the increase in snags. Red-breasted sapsuckers nest in live or dead deciduous trees, so this project would not affect that species.

*Migratory Birds* - Ground and shrub nesting neotropical migratory birds would benefit from increased nesting habitat during the early stages of forest development. Ground or shrub nesting migratory species

that could benefit are: common nighthawk, rufous hummingbird, Allen's hummingbird, lazuli bunting, black-headed grosbeak, orange-crowned warbler, Nashville warbler, Macgillivray's warbler, yellow warbler, yellow-rumped warbler, and lark sparrow. The increase in snags could benefit Vaux's swift, a migratory cavity nester. Canopy nesting birds that prefer conifer would also benefit in the future. Those migratory species include: olive-sided flycatcher, black-throated gray warbler, Townsend's warbler, western tanager, and pine siskin.

#### **4.2.2.6 Effects from New Road Construction and Renovation**

##### **All Species**

Direct Effects: There would be 0.6 miles of new construction and 0.6 miles of road renovation. Road density on federal ownership would increase slightly (from 1.75 to 1.79 mi/mi<sup>2</sup>) within the South Fork of the Pistol River subwatershed. Federal road density would not increase within the North Fork Chetco subwatershed. This roadwork would not impact any known special wildlife habitats (i.e., meadow, cave, wetland) or suitable habitat for owls or murrelets. Survey and Manage species would not be impacted, as the road prism is not suitable habitat. There would be short-term impacts from noise disturbance during construction or renovation.

Indirect Effects: New and renovated roads could increase human use of the roads and negatively impact wildlife through disturbance by vehicle use, poaching, direct injury, and general harassment. These effects would be minimal because gates to the units remain locked except during active land management activities and, at the primary landowner's discretion, during hunting season.

#### **4.2.2.7 Cumulative Effects on Wildlife**

There are no expected significant cumulative negative impacts associated with the Proposed Action on any wildlife species. While tanoak conversion would alter forest structure, it would not result in a substantial loss of tanoak habitat. The Proposed Actions would not contribute to the need to list any special status species through direct, indirect, or cumulative effects.

### **4.3 Effects on Fisheries**

#### **4.3.1 No Action - Fisheries**

##### **4.3.1.1 Fish Populations, Aquatic Habitat and Riparian Area Condition**

Direct and Indirect: Under the No-Action, there would be no conversion of hardwood stands to conifer stands. No cutting of trees would occur in the units proposed for treatment in the South Fork Pistol River or the North Fork Chetco River. No direct effects would occur. Over time, hardwoods would likely enter the aquatic systems gradually, but would not be as resistant to movement and decay due to their smaller size, and their tendency to quickly rot. While this small, decaying wood would provide nutrients to the aquatic system, it would not contribute substantially to long-term channel stability and diversity in these areas or downstream.

Cumulative: There are no reasonably foreseeable future (within 10 years) planned timber harvest or hardwood conversion projects on federally managed lands within the South Fork Pistol River or the North Fork Chetco River subwatersheds. Adjacent private timberlands within the project area would continue to be harvested on a 40-50 year rotation. In the recent past, this activity has amounted to roughly 200 acres of clearcut harvest per year. Based upon stand ages, it is likely that the majority of this activity would occur in the North Fork Chetco River area. Many of these stands, and their associated riparian areas, have already been converted to conifer species. These areas would be harvested under Oregon Department of Forestry guidelines. Under these guidelines, there is very little protection afforded to non-fish bearing

streams. Along fish bearing streams, riparian leave areas can range in width from 25 to 100 feet, depending upon the size of the stream.

The cumulative effects of Federal, State, and private actions would be the long-term persistence of hardwood-dominated riparian areas, with limited recruitment of large wood. Fine and coarse sediment would likely continue to enter the aquatic system at the present rate on privately managed lands that are harvested and burned without the protection of stream buffers on smaller stream channels. On Federally managed lands, sediment would continue to enter the aquatic system at the present rate. Overall, the trend of gradually improving aquatic habitat quality would continue (USDI 1997, USDA 2002).

The extent of area burned in the Biscuit fire of 2002 includes approximately 14 square miles in the East Fork of the Pistol River and the majority of the Upper Chetco River. Fire did not encroach into the North Fork of the Chetco River or the South Fork Pistol River Subwatersheds. As a result, no fire related impacts to these subwatersheds are anticipated.

### **4.3.2 Proposed Action - Fisheries**

#### **4.3.2.1 Fish Populations, Aquatic Habitat and Riparian Area Condition**

Direct: Under the proposed action, the hardwood-dominated units proposed for conversion would be cut, burned, and planted with conifers over a several year period. Approximately 3,100 feet of new road would be constructed in the South Fork Pistol River subwatershed. This road would be located on a stable bench near a ridgeline, with no stream crossings. No direct aquatic impacts would be anticipated resulting from this action.

Indirect: The majority of the streams within or adjacent to the units are intermittent and do not contribute to summertime water temperature conditions. Where perennial streams are present, adequately sized no-treatment buffers have been prescribed in order to prevent increases to water temperature.

#### **Sediment**

Direct and indirect: Predicting sediment delivery to streams is difficult due to both the extreme variability in site conditions and in the variables leading to accelerated erosion. There is no model that can predict exact mechanisms of sediment delivery and instream routing. Therefore, it is not possible to quantify or accurately predict the indirect effects sediment delivery will have on fish habitat (i.e., sedimentation of gravel interstices, channel aggradation and widening, increased suspended sediment load). Attempts at quantifying effects of sedimentation from forest management activities are rarely successful, because an increase in fine sediment is almost always accompanied by other environmental effects (Everest et al. 1987).

Once sediment enters a channel, downstream routing and effects on fish habitat are determined by channel morphology, quantity and size of sediment, and frequency and magnitude of flow events (Swanston 1991). In order to determine potential effects of sediment loads on fish habitat quality, information must be obtained about 1) initial habitat condition and limiting factors for fish production, 2) natural variability in background erosional processes, sediment budgets, and erosion rates, and 3) specific transport rates and routing mechanisms (Sullivan et al. 1987, Everest et al. 1987, Dietrich et al. 1982). Often, intensive long-term field studies are required.

The burning of the proposed units following cutting of the hardwoods is likely to result in exposed soil areas, and consequently, in the potential for small pulses of sediment to be delivered to the aquatic environment during intense periods of rainfall or rapid snowmelt. This sediment delivery would tend to occur during the first heavy rain or snowmelt events following the burning activity, and would dramatically lessen over time as the tanoak stumps and other trees and shrubs resprout and revegetate exposed soil areas. Based upon field reviews of other recently burned hardwood conversion units in these areas, resprout and revegetation occurs rapidly – usually within one year. Increasing the risk of landslides is not likely to occur, due to the fact that the tanoak root structure is not killed or weakened as a result of cutting the stems,

and burning the slash. Therefore, the slope stabilizing properties provided by the tan-oak roots would not be weakened or impaired.

Project design features (PDF's) have been prescribed for all units in order to reduce or eliminate these potential aquatic impacts. These PDF's include: 1) spring burning of most units in order to reduce the risk of large storm events occurring on recently exposed soils, 2) no-treatment protection buffers along all defined stream channels and other selected ephemeral channels, 3) directional falling along no-treatment areas, and 4) closely monitored helicopter ignition of slash to ensure low severity burning of the units. Together, these PDF's would greatly reduce or eliminate the potential for sediment contributions to the aquatic environment. Therefore, based upon professional judgment, there would be a low to moderate risk of sediment delivery to aquatic systems associated with the proposed actions.

If sediment is mobilized following treatment activities, it is likely that it would occur in the form of small particles (< 2 mm ) resulting from localized areas of surface erosion. PDF's would likely reduce or eliminate the likelihood of this material entering the aquatic system. If mobilized sediment were to enter stream channels of the South Fork Pistol River, it is likely that this sediment would be transported to downstream depositional areas. Visual observations of these areas during stream surveys indicate that there is a high proportion of fine sediment found in these gravel-dominated lower gradient reaches (USDA, 2002). Project Design Features were developed to reduce or eliminate the risk of this impact occurring, therefore, any potential sediment contribution to fish bearing waters of the South Fork Pistol River would be small and insignificant relative to background rates. In addition, treatment of these units would be spread out in space and time (over a five year period), thereby further reducing the potential risks associated with the project. Therefore, based upon professional judgment, the risk of sediment contributions resulting in a detectable negative effect on fish or fish habitat is low.

If mobilized sediment entered channels in the North Fork Chetco River, the steep nature of the perennial and intermittent channels associated with these units, and the high intensity storm events that can occur in this area would transport it out of the respective drainages to the Pacific Ocean. Extensive pebble count data, and professional observations indicate that none of the low gradient, gravel dominated areas within the North Fork Chetco River show signs of excessive deposition of fine sediment, even though the natural source of fine sediment is believed to be high (NFC WA, 1997). Project Design Features were developed to reduce or eliminate the risk of this impact occurring, therefore, any potential sediment contribution to fish bearing waters of the North Fork Chetco River would be small and insignificant relative to background rates. In addition, treatment of these units would be spread out in space and time (over a five year period), thereby further reducing the potential risks associated with the project. Therefore, based upon professional judgment, the risk of sediment contributions resulting in a detectable negative effect on fish or fish habitat is low.

Cumulative:

*Riparian* - A cumulative effect of removing hardwoods and converting those units and their associated Riparian Reserves into conifer stands would be the long-term increase of conifer-dominated Riparian Reserves on Federally managed lands. Over time, these conifer trees would likely enter the aquatic systems gradually, and would be resistant to movement and decay due to their large size, and their resistance to rot. On rare occasions, when large storm events trigger landslides and debris flows, this large wood would be transported to downstream fish-bearing waters. From an aquatic standpoint, this wood would serve as a long-term source of organic nutrient inputs, and would also provide a long-term source of channel roughness that would increase stream stability and habitat diversity in these areas and downstream.

It is likely that private industrial timberlands within the project area would continue to be harvested on a 40-50 year rotation. The majority of these stands, and their associated riparian areas, have already been converted to conifer species. These areas would be harvested under Oregon Department of Forestry guidelines. Under these guidelines, there is very little protection afforded to non-fish bearing streams. Along fish bearing streams, riparian leave areas can range in width from 25 to 100 feet, depending upon the size of the stream. Based upon this, it is not likely that these areas would serve as a long-term source of large woody material available to enter the aquatic environments of the North Fork Chetco or South Fork Pistol River systems.

As federally managed Riparian Reserve stands develop into mature conifer stands, they would likely serve as the only long-term, stable source of large wood for the North Fork Chetco River and South Fork Pistol River systems. Within the checkerboard land ownership patterns found in these watersheds, these Riparian Reserves would become increasingly important, and would serve as localized refugia for riparian dependent species.

*Timber Harvest/Future Actions* - There are no foreseeable future (within 10 years) timber harvest or hardwood conversion projects on federally managed lands within the South Fork Pistol River or the North Fork Chetco River subwatersheds. On adjacent private timberlands, it is likely that timber harvest activities would continue at roughly the same pace. In the recent past, this activity has amounted to roughly 200 acres of clearcut harvest per year. Based upon stand ages, it is likely that the majority of this activity would occur in the North Fork Chetco River area.

*Sediment* – Project Design Features are likely to greatly reduce or eliminate potential contributions of fine sediment to the aquatic system. If sediment were to enter the aquatic system, it would likely occur in the form of small, short-term pulses. It is not likely that this alternative would contribute negatively to the cumulative sediment load within the aquatic system of the North Fork Chetco River. In general, this river is considered to be transportational in nature, with a tendency to mobilize fine sediments out of the watershed to the Pacific Ocean. In addition, watershed analysis indicates that natural background levels of fine sediment, measured as turbidity, are high. Any short-term pulse of fine sediment would be impossible to detect against this background, and would be well within the range of natural variability for these areas.

In the South Fork Pistol River, any potential sediment that reaches the aquatic system is likely to be so small that it would be considered inconsequential. Within this subwatershed, the proposed action would result in treatment of 87 acres (0.5% of the subwatershed). Of this figure, only 17 acres of land within riparian reserves would be treated. According to the draft Pistol River watershed analysis, overall rates of sediment being contributed to the aquatic system are declining. PDF's addressing sediment and water quality would likely reduce or prevent any contribution to the cumulative effects of fine sediment within the subwatershed and watershed.

Fine and coarse sediment would likely continue to enter the aquatic system at the present rate on privately managed lands that are harvested and burned without the protection of stream buffers on smaller stream channels. Sediment inputs from landslides and surface erosion on private land are likely to be smaller than those seen in the recent past (1960's-1980) due to an increased understanding of the importance of road construction and maintenance techniques, harvest techniques, lower-severity broadcast burning, and riparian area protections.

The extent of area burned in the Biscuit fire of 2002 includes approximately 14 square miles in the East Fork of the Pistol River and the majority of the Upper Chetco River. Fire did not encroach into the North Fork of the Chetco River or the South Fork Pistol River Subwatersheds. As a result, no fire related impacts to these subwatersheds are anticipated

*Aquatic Habitat Conditions* – Over time aquatic habitat conditions are likely to gradually improve, as conifers grow to larger sizes and begin to enter the aquatic system in treated areas. This fact, coupled with the cessation of stream cleanout activities, would result in streams and rivers that gradually increase in complexity and habitat quality. Overall, management-related sediment inputs from landslides and surface erosion would continue to decrease across the landscape due to an increased understanding of the importance of road construction and maintenance techniques, harvest techniques, lower-severity broadcast burning, and riparian area protections. Passive restoration in the form of protections on federally managed land afforded by LSR and/or Riparian Reserve land use allocations in both subwatersheds would also add to the trend of improving aquatic habitat. In addition, restoration efforts by ODFW and local watershed associations in portions of the Chetco and Pistol Rivers, including additions of large wood, riparian fencing and planting, and modification of agricultural practices would all contribute to a gradual upward trend in habitat quality.

*Threatened and Endangered Species* - The fisheries biologist has concluded that the proposed actions constitute a "Not Likely to Adversely Affect" determination to listed fisheries species and Essential Fish Habitat (EFH). All correspondence from NOAA Fisheries will be available for review at the Coos Bay District Office. See BA in the analysis file section F.

## **4.4 Effects on Soils**

### **4.4.1 No Action - Soils**

Direct and Indirect Effects: Under the no action, sediment delivery would continue at the present rate from within channel sources and areas disturbed by windthrow or storm damage. Some minor amount of fine sediments (1-3 tons/acre) would continue to be delivered until a protective armoring layer developed on the soil surface or the canopy cover returned. This would take approximately 1 to 3 years to complete. Adjacent conifers are not expected to seed-in the exposed open canopy gaps. Road construction and improvement would not occur under this alternative. Gullies and rills within the road surface in the analysis area would continue to export fine sediment (not measured).

Cumulative Effects: Continued harvest from private industrial forestlands would occur within the analysis area at the expected rate of 200 acres per year. Management in these stands would include manual and chemical treatment of competing tanoak and pre-commercial thinning to enhance Douglas-fir growth. Sediment delivery to stream networks due to these actions is not expected to be above current baseline levels.

The area burned in the Biscuit fire of 2002 includes approximately 14 square miles in the East Fork of the Pistol River and the majority of the Chetco River watershed. There is a mosaic of burned and unburned areas within the overall fire area. Some burned areas were classified as low severity, others moderate or high. Sediment delivery and debris routing is expected to be on the low end of the range of natural variability for a burned area in the Pistol River 5th field watershed. This is due to the low amount (<25%) of area considered to be Moderate to High in burn severity classes and the extent of area impacted (14 out of 104 square miles). Sediment delivery and debris routing may be on the high end of the range of natural variability in the Chetco River 5th field watershed due to the larger extent of area exposed during burning across the entire watershed. In addition, the percent of burned area in the moderate to high burn severity classes was greater (39%) than the amount in the Pistol River watershed. Because the fire did not encroach into the North Fork of the Chetco River subwatershed, no effects on sediment delivery in the portion of the analysis area in the North Fork Chetco subwatershed is expected.

### **4.4.2 Proposed Action - Soils**

Direct and Indirect Effects: Under the proposed action, the re-establishment of conifer trees can be expected to be a direct effect. The units under consideration have the potential to provide a commercial crop within the next 30 years. Site indexes for the soil map units range from 113 to 126 for the majority of the acres proposed. The soils would rate from high Site Class 3 to mid Site Class 2, with Site 1 being the most productive (NRCS preliminary data). Many of the scattered existing conifers are of commercial size at this time and reside on topographic benches or in draws. These conifers established after the last stand replacing fire and are now growing at commercially acceptable rates. Soil types are not vastly different from neighboring Douglas-fir plantations. Conifers can become site dominant in less than six years with a reduction of competing tanoak

After slashing and burning treatments, Knobcone pine would naturally regenerate in rocky areas currently supporting Knobcone pine. Knobcone pine is a fire regenerated conifer and found on the rocky sites. Douglas-fir is not expected to establish on these rocky areas.

No increase in sediment delivery is expected from the road building activities. The proposed road location is high on the ridge and not located near any streams. Any ditch relief runoff collected would be dispersed out on the hillslopes allowing sediment to be deposited on site.

Fine sediments would cease to be delivered to the stream network following road renovation due to a change in the amount of runoff generated from the road surface. By increasing the current number of ditch relief pipes and dispersing the water on the hill slope, rill and gully erosion will cease. Under the proposed action, sediment would still be delivered from in-channel sources during storm events (USDI 1997). Sediment from overland flow sources would be minor after slashing and burning activities. No treatment areas adjacent to ephemeral and intermittent streams are intended to retain both the surface roughness component and organic matter filtering capacity that currently exists on site.

Erosion hazard ratings associated with soils in the analysis area suggest there is some potential for erosion to occur associated with the proposed action. However, the NRCS erosion hazard rating given to these soils is based on the most erosive slopes within each class. The NRCS rating also gives no consideration for capture of sediment once mobile from the site. The proposed action provides the necessary capture mechanisms (e.g., no treatment areas, burn prescriptions, etc.) to keep such mobilized sediment from being delivered to the stream network for the average precipitation events expected in the analysis area. Some fine sediment delivery may occur for the first or second winter during large precipitation events that produce overland flow across the units. After that time, surface protection from tanoak sprouts, conifer trees, and brush would provide adequate levels of cover (>40% of the surface area) to prevent such erosion from occurring.

Burning the slash load to increase plantable area and gain access to the soil will have a direct effect on the soil resources. It is expected that the fire intensity on the proposed units would be high but have a short duration time. This would provide the desired low burn severity impact to the soil environment. Guidance requires a visible layer of organic matter to be intact on some portion of the units after burning (USDI, 1986). During fiscal years 1987-90, ten percent of the slash-burned units monitored (2 of 20) had excessively hot burns: both were "summer burns" and caused unacceptable loss of organic materials, possibly creating a negative impact on long-term productivity. The planned winter and early spring burns expected under this action would not be considered summer burns. The planned burns are in contrast to natural wildfires that typically burn very hot because of extremely dry fuels and the hot, dry weather conditions of mid-to-late summer (USDI, 1994).

The proposed action incorporates suggestions from Hansen (1981) that protect surface soil and organic layers. Those suggestions include: burning when the organic matter is moist, the weather conditions are moist and lower in temperature and wind velocity, and adjusting the ignition pattern, and extent would be employed. These conditions provide lower soil temperatures and less consumption of debris during the burn. Energy resultant from the ignition of the felled tanoak is used to pre-heat upslope fuels, drive off high moisture levels, and moderate the overall burn intensity. Fire intensity, in and of itself, is not a good measure as it has more to do with flame length and BTUs produced at the time of the burn and not how the soil is impacted by the overall heat (temperature and duration). Burn severity is the normal measure used to gauge this impact and the proposed action is designed to produce a moderate intensity, short duration fire event resulting in a low burn severity. Thus reducing the amount of organic matter consumed and providing some amount of soil surface protection. In addition to the organic matter layer, a distribution of larger diameter boles and limbs would be left on site to limit the exposure of the soil surface and the delivery of fine sediment to the stream network.

An indirect effect from the proposed action would be an increase to soil productivity over time. The replacement of non-merchantable tanoak with Douglas-fir would provide a commercial conifer forest. This forested environment would accumulate organic matter above and beyond the current recruitment of tanoak leaves in the fall. Soil surface protection would increase under a conifer canopy and microbial processes within the soil would increase. Thus, infiltration of water as well as water holding capacity would increase due to the layer of organic matter.

Cumulative Effects: A cumulative effect of growing more conifers on the landscape, particularly in riparian areas, would be a more even release of stored water and soil nutrients over a longer timeframe. Any future removal of these conifers from GFMA lands would still leave a continuous canopy cover, shade, and riparian communities not currently on the landscape within the Riparian Reserve.

The cumulative effect of the proposed action in regards to sediment delivery would be no impact. The proposed actions on 322 acres, spread over a 5 year timeframe would be insignificant across the two individual 5<sup>th</sup> field watersheds. Private industrial forestlands are still expected to harvest 200 acres/yr in the analysis area resulting in 1,000 to 1,200 acres of potential harvest and burned area over the same time frame. Cumulative effects from the Biscuit fire are not expected to be different from the no-action alternative. Sediment delivery to stream networks due to these actions are not expected to be above the current baseline levels or outside the natural range of variability.

## **4.5 Effects on Hydrology**

### **4.5.1 No Action - Hydrology**

#### **4.5.1.2 Water Quantity (Annual Yield, Peak and Base Flows and Timing)**

Direct and Indirect Effects: Annual yield and peak flow will be within the range of natural variability in the treatment area. The intermittent streams may dry sooner in the spring due to higher evapotranspiration rates in tanoak stands compared with a conifer stand.

#### **4.5.1.3 Water Quality**

##### **Stream Temperature**

Direct and Indirect Effects: The treatment area is situated on ridge tops or moderate upper slopes. There will be no effect under this alternative because the stream channels are dry during the summer critical heating period (June-September) and would remain fully shaded.

##### **Sediment**

Direct and Indirect Effects: Onsite soil loss on hillslopes and sediment delivery to channels will be within the range of natural variability in the treatment area. There is ample crown area of tanoak and a blanket of leaf litter on the ground to prevent erosion in most areas.

##### **Channel Condition and Large Wood**

Direct and Indirect Effects: Channel conditions will be maintained as flashy sediment limited transport reaches, fairly resistant to erosion under normal flows. There is insufficient large wood in the channels, either hardwood or conifer, to change the morphology from a cascade to a more stable step pool form. The conifer component of riparian stands is underrepresented in these headwater channels. Fierce tanoak competition in these areas would delay recruitment of conifers into the downed wood supply.

#### **4.5.1.4 Cumulative Effects**

No cumulative effects on water resources are anticipated under this alternative. This is because the primary road system is in place and stabilized, the majority of the watersheds are forested, and fire is suppressed. Furthermore, less than 0.5% of the watersheds are being harvested annually by private forestry, under state forest practice rules.

## **4.5.2 Proposed Action - Hydrology**

Direct and Indirect Effects: There are no perennial streams within any of the units. Some ephemeral channels were identified within some of the units that did not meet the Northwest Forest Plan definition for an intermittent channel, based on physical criteria.

### **4.5.2.1 Water Quantity (Annual Yield, Peak and Base Flows and Timing)**

#### **Annual Yield**

Direct and Indirect Effects: There would be some short-term minor increases in annual yield from the proposed project. Evapotranspiration in tanoak stands is higher than other hardwoods (Burns and Honkala 1990). After tanoak conversion to an established conifer stand there would be less water used over the long term.

#### **Peak Flow**

Direct and Indirect Effects: The proposed treatment would not be expected to modify peak flows. The proposed treatment would not have any adverse impacts on floodplains, flood zones, or flood hazards of streams within or downstream from the proposed units. Peak flows are dependant on precipitation inputs as rain or snowmelt, subsequent infiltration, routing to channels and concentration within channels. Evapotranspiration losses following forest conversion (hardwood to conifer) theoretically may cause small increases in the discharge of peak flows in the fall and to a lesser extent the spring. Such increases would not exceed bank full flow (Harr 1976). Furthermore, no-treatment zones along channels in the project area provide a boundary where trees are uptaking any additional water from upslope unit areas, thereby reducing most available water for runoff.

GIS calculations show that approximately 50 acres are within the transient snow accumulation elevations (>2000 feet used in this analysis). Unit 22 has 10 acres within this transitory zone, unit 23, 12 acres, unit 24, has 21 acres, and Pistol 4 has 7 acres. These areas could be subject to local limited additional runoff for up to 10 years if rain on snow would occur. However, this effect is channel specific and there is not enough converted area to result in more than a low risk of slightly elevated flow for a short time period.

#### **Low Flow**

Direct and Indirect Effects: Low flows may initially increase, following tanoak conversion in the analysis area. However, intervening riparian tree leave areas along all channels would continue to transpire water and may negate any down slope movement from converted upslope units. If any excess water did reach a channel, the effect may only be noticed in the spring or fall and the absolute difference in additional quantities of streamflow would be small (Harr and Krygier, 1972).

### **4.5.2.2 Water Quality**

#### **Temperature**

Direct and Indirect Effects: The channel segments in or near the proposed conversion units will be dry during the critical summer stream heating period (June-September). Thus the proposed action is expected to have no effect upon stream temperatures of the Pistol River or Chetco River 303(d) water quality limited streams. Furthermore, a buffer or no-treatment zone will be retained along all channels providing shade and mesic conditions.

#### **Sediment-Hillslope Processes**

Direct and Indirect Effects: Due to the interactions between climate, geomorphology and burning treatments, some sediment delivery may be expected. The treatment units are situated on broad ridges to

sloping side slopes, generally up to 40% with some slopes up to 60%. The units will be felled one season prior to burning. Site preparation plans include burning to reduce the fuel load and provide planting spots. Prescribed fire is anticipated to result in a low severity burn. However, >70% of the tanoak leaves, fine limbs and organic matter will be consumed leaving the unit susceptible to erosion. Because most conversion units would be burned in the spring, there is a low risk of a high precipitation event (generally above 2 inches in 24 hours) capable of producing sheet, rill or gully erosion.

Any rills or gullies would tend to form in convergent topography where runoff is concentrated. However, the risk of this occurrence is low and any rill/gully formation may be discontinuous, with detached soil settling out on unit benches or at the edge of the no-treatment zone and not joining the stream network. Effective cover would be regained rapidly as the tanoak will start sprouting within 7 days after slashing or burning (Tappeiner 1984). Considerable growth of tanoak would occur over the following summer growing season, lowering the potential for in-unit erosion in the next winter. A distribution of charred logs would remain after burning and act as contour barriers, minimizing erosion. Additionally, the no-treatment zones would retain a tanoak organic leaf layer. These factors would result in a low probability of sediment delivery to ephemeral or intermittent streams.

Winter burning would result in a moderate to high risk of in-unit erosion. This is because there is a higher probability of a large storm following burning before the stabilizing effects of vegetative regrowth occurs. Soil may be detached with subsequent redistribution and settling within the unit. Only 32 acres (10% of the total treatment acres) are expected to undergo winter burning and they are designed with very wide no treatment areas. This would result in a low risk of sediment delivery into a channel.

#### **New Road Construction**

Direct and Indirect Effects: In unit P4 in the South Fork Pistol drainage, about 1,100 feet of new road will be constructed on private industrial forest land and about 1960 feet on BLM. The road would be built with a 14-foot sub-grade with a 4" lift of surface rock applied. The road is on very gently sloping broad ridge to bench topography and does not cross any streams. There are no channels near the proposed road. This factor taken together with a design feature of storm proofing the new construction with seed and mulch cover will result in no sediment delivery to a channel.

#### **4.5.2.3 Channel Condition and Large Wood**

Direct and Indirect Effects: The unit design, including intervening riparian reserves and no-treatment zones, is expected to have little effect on changes in hydrology or sediment delivery to the down slope bedrock or cascade type channels in the Pistol or Chetco watersheds. Channel conditions would be maintained. Channel dimensions and competence is not expected to change from this activity because these are resistant channel types under normal flows.

#### **4.5.2.4 Cumulative Effects**

Cumulative effects from this project activity at the fifth field watershed scale are unlikely. This is because the project does not substantially change the baseline from the no action alternative. In addition the project would be staged for conversion over a 5 year period.

#### **4.5.2.5 ACS Consistency**

#### **Aquatic Conservation Strategy Consistency**

The Aquatic Conservation Strategy (ACS) was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of Pacific Ocean anadromy (ROD, Standards and Guidelines, p. B-9). The appropriate landscape scale for evaluating the consistency of individual and groups of projects with the

ACS is the watershed, corresponding with the “fifth-field” hydrologic unit code (HUC) as defined in the “Federal Guide for Ecosystem Analysis at the Watershed Scale”<sup>5</sup>

Aquatic Conservation Strategy Consistency, and compatibility with other Initiatives

The four components of the Aquatic Conservation Strategy are 1) Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis, and 4) Watershed Restoration.

- 1) Interim Riparian Reserve widths would be maintained under all alternatives. The effectiveness of the interim Riparian Reserve widths was analyzed in the FEMAT Report. Silvicultural treatments within Riparian Reserves were designed to improve the growth and structural diversity of riparian areas over the long term, as needed to attain the ACS objectives.
- 2) Within the analysis area the North Fork Chetco River is a Tier 1 Key Watershed. There are no key watersheds located in the Pistol River watershed.
- 3) The North Fork Chetco Watershed Analysis identifies general physical, biological and historical processes affecting the landscape, contains objectives for restoration, and recommends silvicultural and restoration projects specific to the analysis area. The draft Pistol River Watershed Analysis is nearing completion, and also lists management opportunities that include riparian silviculture in hardwood dominated stands.
- 4) During the interdisciplinary team process for this EA, some of these watershed restoration opportunities, such as riparian silviculture, were incorporated into the action alternatives.

The Oregon Coastal Salmon Restoration Initiative (OCSRI) Conservation Plan (Draft Revision 02-24-97), page 26, identifies future BLM actions that can contribute to the successful implementation of the OCSRI; among those identified are riparian area silviculture, which is a part of the Proposed Action. Therefore, the Proposed Action is consistent with the role of the BLM described in the OCSRI.

The Chetco River Watershed Council’s Action Plan (September, 2001), page 13, lists action items that would be beneficial to the Chetco River system. Two general action items include: Riparian silviculture to increase shade and large wood; and to identify and initiate any and all restoration opportunities for the North Fork Chetco, especially those with shade and large wood components. Therefore, the Proposed Action is consistent with the role of federal land management agencies described in the Chetco River Watershed Council’s Action Plan.

The Pistol River Watershed Council’s Action Plan (September, 2001), page 12, lists action items that would be beneficial to the Pistol River system. Two general action items include: Riparian silviculture for shade and large wood recruitment and to identify reaches where wood is critical to stabilizing sediment, especially in tributaries and the upper South Fork (See ACS Objectives in Appendix C).

## **4.6 Effects on Botany**

### **4.6.1 No Action - Botany**

#### **4.6.1.1 Vascular Plants**

Direct/ Indirect: Since there is little or no conifer component to these units, tanoak would continue to dominate them. As tanoak stems died, blew down, or were burnt up by stand replacing fires, new tanoak stems would sprout from underground burls and from the abundant seed source available in these units.

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<sup>5</sup> Reference November 9, 1999 Regional Ecosystem Office memorandum concerning Northwest Forest Plan Requirements for ACS consistency determination.

Vascular plant diversity would remain low and be dominated by several saprophytic plant species (ground cone, spotted coralroot, gnome plant, and California pinefoot), bear grass, and shrubs such as rhododendron and evergreen huckleberry in the units lower on the slope within the coastal fog belt zone. There would be no effect to Survey and Manage or Special Status (Bureau Sensitive and Bureau Assessment Species) botany species from the no action alternative.

Cumulative: Continued tanoak dominance in federally managed lands and many private lands would similarly promote a stable non-vascular plant community, with a relatively small number of species across much of the analysis area.

#### **4.6.1.2 Non-vascular Plants**

Direct/ Indirect: Bryophyte and lichen diversity would remain low and be greatest on and around the widely scattered Douglas-fir trees and in areas that have more moisture available such as intermittent and ephemeral streams and seasonally wet areas. There would be no effect to Survey and Manage or Special Status (Bureau Sensitive and Bureau Assessment Species) botany species from the no action alternative.

Cumulative: Due to tanoaks prolific seed production and its ability to vegetatively resprout (Jensen et al. 1995), these units would likely remain tanoak dominated long into the future. Even significant future disturbances, such as stand replacing fires, would probably not alter this dominance. The above ground portions of tanoak are easily killed by fire. However, it produces an underground burl that would survive repeated fires and still have energy to sprout (Atzet et al. 1982). Both the vascular and non-vascular plant communities would thus be relatively stable and would continue to be represented by a relatively small number of species.

### **4.6.2 Proposed Action - Botany**

#### **4.6.2.1 Vascular Plants**

Direct/ Indirect: Currently, the abundance and diversity of vascular plant species is very low. Establishing a new conifer plantation and exposing these sites to an increase in solar radiation would initially result in an increase in the herb and shrub layer. After several years, the new plantation would start to provide more shade and cover and the shrub and herb layer would decrease and some of the species now existing would begin to recolonize the understory. Underground tanoak burl sprouting may be hard to control in some of the units and some tanoak component is likely to persist which would add to the overall diversity of the resulting understory shrub community. The saprophytic plant group, which currently represents the most diverse component of the vascular plant community, may decrease in diversity and abundance, particularly with those species closely associated with tanoak. There would be no effect to Survey and Manage or Special Status (Bureau Sensitive and Bureau Assessment Species) botany species.

Cumulative: During plant surveys of these tanoak-dominated forests, vascular plant diversity was extremely low with the greatest diversity seen in saprophytic plant group represented by species such as ground cone, spotted coralroot, gnome plant, and California pinefoot. Although saprophytic plant species particularly associated with tanoak would decrease, overall vascular plant diversity would likely increase. Cumulative effects are thus expected to be negligible.

#### **4.6.2.2 Non-vascular Plants**

Direct/ Indirect: Lichen species abundance would initially drop dramatically and pioneer species such as green algal-foliose lichens would slowly recolonize the new conifer plantation. Lichens grow slowly and disperse slowly (Bailey 1976). As the conifer stand becomes established, the lichen biomass would slowly increase (Neitlich 1993). In these newly established plantations, hotspots for macrolichens would include gaps, hardwoods, wolf trees, and any old growth remnant trees (Neitlich & McCune 1996).

Bryophyte species abundance would also initially drop dramatically. As the young conifer plantation became established, bryophyte abundance would be lower in dense stands and positively correlated with canopy gaps, percentage of hardwood, and incident solar radiation (Rambo & Muir 1998). There would be no effect to Survey and Manage or Special Status (Bureau Sensitive and Bureau Assessment Species) botany species.

Cumulative: During botany surveys of these units, the scattered Douglas-fir encountered were hotspots for both lichen and bryophyte diversity. Conversely, lichen and bryophyte diversity was very low in areas of pure tanoak. As these conifer-dominated plantations grow older bryophyte and lichen diversity would increase (Neitlich 1993, Rambo & Muir 1998) and would likely be greater than in the existing tanoak-dominated forest.

#### **4.6.2.3 Road Construction**

Direct: Road construction eliminates potential habitat for Survey and Manage or Special Status species. No Survey and Manage or Special Status species were found along the proposed road location. The underground tanoak burls would be removed during the road clearing process and no tanoak sprouting would occur within the road prism.

Indirect: The 0.6 miles of new road construction on BLM lands would be adjacent to a proposed slashing unit and the effects will be similar to those listed above. Additional light and air movement in the stand adjacent to the road may alter the microclimate, which may alter species composition adjacent to the road.

Cumulative: Habitat loss due to new roads should be a minimum since no other actions are proposed for the foreseeable future on federal lands and most of roads found on private lands have been built.

#### **4.6.2.4 Road Renovation**

Direct: There is no direct effect to Survey and Manage or Special Status species due to road improvement as the road is already in a state of non-suitable habitat.

Indirect: Additional light and air movement in the stand adjacent to the road may alter the microclimate, which may alter species composition adjacent to the road.

Cumulative: No cumulative effects are expected from the proposed action.

#### **4.6.2.5 Snag Creation/Coarse Woody Debris**

Direct: Potential habitat for epiphytic Survey and Manage or Special Status species associated with live trees would be lost when live trees are killed by turning them into snags and down woody debris. This loss would have no effect on the persistence of Survey and Manage or Special Status species.

Indirect: The creation of snags and coarse woody material may increase habitat for some species of Survey and Manage or Special Status species.

Cumulative: This would increase habitat for late-successional associated species within the subwatersheds.

### **4.7 Effects on Port-Orford-Cedar**

#### **4.7.1 No Action - Port-Orford-Cedar**

There is no known Port-Orford-cedar in any of the harvest units, on private lands within the analysis area, the rock quarry areas or along the proposed access routes. There are no known direct, indirect or

cumulative effects on the spread of the Port-Orford-cedar root rot disease by selection of the “No Action” alternative.

#### **4.7.2 Proposed Action - Port-Orford-Cedar**

There is no known Port-Orford-cedar in any of the harvest units, on private lands within the analysis area, the rock quarry areas, or along the proposed access routes. There are no known direct, indirect or cumulative effects on the spread of the Port-Orford-cedar root rot disease by selection of the “Proposed Action” alternative.

### **4.8 Effects on Sudden Oak Death**

#### **4.8.1 No Action - Sudden Oak Death**

Direct and Indirect Effects: There would be continued risk of infection to tanoak stands within the analysis area. No SOD has been detected outside of the quarantine area.

Cumulative Effect: There would be continued risk of infection to tanoak stands within the range of host species on both public and private lands. As market conditions improve for wood chips, the amount of tanoak stands may be reduced on private lands, thus providing less highly susceptible host species.

#### **4.8.2 Proposed Action - Sudden Oak Death**

Direct and Indirect Effects: There would be 322 acres less tanoak habitat available for infection to the disease. Stands with the highest stand component of tanoak would be converted to Douglas-fir. Units 6, 8, 9, and 10 are within the SOD quarantine area. One treated site (eradicated) is adjacent to Unit 10 on private lands. Slashing and burning of unit 10 will remove adjacent host material from the likelihood of future infection. Although Douglas-fir were found to be a host of the disease (on the needles), no instances of mortality have occurred from SOD nor has SOD ever been found on Douglas-fir in Oregon. The primary host most susceptible to mortality would be reduced throughout the area. The proposed action treatment is similar to the eradication disease strategy being applied to known infection sites in the Oregon quarantine area.

Cumulative: There would be slightly less risk of infection to tanoak stands within the range of host species on both public and private lands. As market conditions improve for wood chips, the amount of tanoak stands may be reduced on private lands, thus providing less highly susceptible host species

### **4.9 Effects on Noxious Weeds**

#### **4.9.1 No Action - Noxious Weeds**

Direct and Indirect: There are no direct effects to noxious weeds as a result of the no action alternative. The current rate of infestations, spread, and growth of noxious weeds would continue under the no action alternative. In the short term, the introduction of new species of noxious weeds or the spread of existing noxious weed populations would continue, especially along roads and in existing young plantations. Human and natural events would continue to introduce new weeds and/or create the sunlight and disturbed soil needed for weed establishment.

Cumulative: In the long term, noxious weed populations on Bureau of Land Management lands would decrease as a result of treatments and/or competition for light resources as weeds are shaded by surrounding maturing vegetation. Seed beds of some weeds can survive 100+ years, but current land classification and guidelines support no or limited vegetation denuding activities for time frames greater

than 100 years. Therefore, most, but not all of these types of seedbeds would become non-viable. However, management activities on surrounding private lands and roads, or private use of Bureau of Land Management lands and roads would continue to introduce new noxious weeds or act as seed sources for establishment of individual plants or species at disturbed sites.

#### **4.9.2 Proposed Action – Silvicultural Treatments - Noxious Weeds**

Direct: Any fuels treatment that generates bare soil and adequate sunlight would result in a habitat favorable to noxious weeds that would become established as a result of existing seed beds, near by seed sources, or accidentally introduced seed. If seed is already present in the soil for species that benefit from heat scarification then those seeds would likely germinate if fire is used. While these activities favor bare disturbed soil and sunlight needed by noxious weeds, the application of best management practices and project design features would prevent the introduction and spread of noxious weeds

Indirect: Slashing activities and broadcast burning would result in the death of mature noxious weed plants if found in any treatment units. However, surface disturbances activities would foster a favorable site for seed crop development. These units would be monitored and treated with future noxious weeds control efforts.

Cumulative: The result of pre-treating existing noxious weeds and project design features would reduce the numbers of noxious weeds. Although conversions units would favor noxious weed establishment, the noxious weeds may temporally increase until silvicultural treatments and competition or shade from native plants reduces these populations. In the short term given favorable conditions noxious weeds would increase, but is unlikely that spread would occur. The long-term effect would be the same as the “No Action” alternative.

#### **Road Construction and Road Renovation**

Direct: Since noxious weeds along the roads in the area would be treated and best management practices and project design features that mitigate against noxious weed introduction, spread, or establishment would be applied, no direct effects on noxious weeds are anticipated. No noxious weeds were found on the proposed road location.

Indirect: No indirect effects have been identified.

Cumulative: Given the poor soil conditions and harsh environment of road right-of-ways, establishment of native plants is difficult. The potential exists that exposed soil would favor establishment of noxious weeds. Other traffic use on these roads would be minimal due to the entire system being gated. There would be a low potential for noxious weeds to become established as the result of administrative use and private activities from other areas. However, this area would be monitored for future treatments within the District.

### **4.10 Effects on Fuels Management**

#### **4.10.1 No Action - Fuels Management**

Direct : Under the no action alternative, no direct short-term consequences to the fuels and fuel loadings of the proposed project areas would occur.

Indirect:- An indirect consequence of the no action alternative would be progressively stagnating stand conditions with associated mortality which over time may result in a build up and accumulation of dead or dying fuels, both down and standing.

Cumulative: In the analysis area, approximately 200 acres per year in private ownership would be managed and incur slash burning. On these lands, slash burning and continued forest management would lead to stands with reduced fuel loads and fire risks.

#### **4.10.2 Proposed Action - Fuels Management**

##### **Slash Burning**

Direct : There would be a short-term increase in volatile fuel loadings and an increased risk of wildfire in the slashed units prior to broadcast burning. During the broadcast burn treatment the project area would receive a high intensity, short duration burn resulting in a low impact on soils and adjacent stands. After broadcast burning, all conversion units would be at a low risk for wildfire for up to 12 years until the conifer canopy closes. This risk would continue until these stands were commercially thinned. Though the available fuels increase, the risk would still be considered low due to the low incidence of natural and man caused fire, a nearby fire detection facility (Bosley Butte Lookout), aerial detection flights, good road access, and the readily available suppression forces administered by Coos Forest Protection Association (CFPA) for private and BLM lands. All fires in these project areas would receive immediate suppression activities and would continue until the threat is eliminated.

Indirect: Treatment activities would create openings in the project areas that may mimic openings caused by naturally occurring fire that has been eliminated from the analysis area

Cumulative: In the analysis area, approximately 200 acres per year in private ownership would be managed and incur slash burning. Over the course of the next three to five years, 322 acres in public ownership would incur slash burning. Slash burning and continued forest management would lead to stands with reduced fuel loads and fire risks.

##### **Air Quality and Smoke Management**

Direct and Indirect: All prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan, (OAR 629-43-043), as addressed in the RMP. Gold Beach and Brookings are not Oregon state designated areas for smoke concerns. Furthermore, broadcast burning would be scheduled during the period starting in December and ending in April to mid-May. This window of burning would minimize the amount of smoke emissions by burning when duff and dead woody fuel have the highest moisture content, which reduces the amount of material actually consumed. In addition, seasonal restrictions reduce the likelihood of ignition of a large-scale wildfire and subsequent smoke emissions.

Cumulative: Air quality and smoke from both federal and private land prescribed fire activities would comply with the guidelines established by the Oregon Smoke Management Plan. No adverse effects on designated air sheds are expected to occur.

#### **4.11 Effects on Recreation**

##### **4.11.1 No Action - Recreation**

Direct, Indirect, and Cumulative: There are no known impacts to recreation from the no action alternative.

##### **4.11.2 Proposed Action - Recreation**

Direct and Indirect Effects: There is no public access to federal lands within this project area, due to private control of all roads accessing the area.

Cumulative: There are no foreseeable cumulative impacts to recreation from the proposed action.

## **4.12 Effects on Cultural Resources**

### **4.12.1 No Action - Cultural Resources**

Direct, Indirect, and Cumulative: Cultural resources would be unaffected by the no action alternative, as no ground disturbing activity would take place.

### **4.12.2 Proposed Action - Cultural Resources**

Direct, Indirect, and Cumulative: It is likely that cultural resources would be unaffected by the proposed action, as there are no known resources which would be subject to alteration by ground disturbance during thinning or conversion activities.

## **4.13 Effects on Solid and Hazardous Materials**

### **4.13.1 No Action - Solid and Hazardous Materials**

No effects are anticipated.

### **4.13.2 Proposed Action - Solid and Hazardous Materials**

Direct, Indirect, and Cumulative: No effects are anticipated from the proposed action, unless a release of hazardous materials occurs as a result of operations. Depending upon the substance, amount, and environmental conditions in the area affected by a release, the impacts would range from and short term to more extensive and more lasting. Minor amounts (less than 2 gallons) of diesel fuel, gasoline or hydraulic fluid leaking from heavy equipment onto a road surface, with little or no chance of migrating to surface or ground water before absorption or evaporation would be an example of minimal impact.

If a petroleum substance is released at or above the State of Oregon reportable quantity of 42 gallons, or has the likelihood of reaching ground or surface water regardless of amount, it would cause from more serious impact to the environment. This impact would range from localized contamination of soil and vegetation, to entry into surface water and toxic effects upon fisheries and aquatic life habitat. The greater the quantity of material released, the more the effects are likely to be, coupled with variable pathway conditions such as seasonal water levels, flow velocity, and rainfall.

Human health is not likely to be at risk under the proposed alternative.

Access road or skid trail closures would diminish the future potential for illegal dumping of solid and hazardous waste along roadsides and in riparian areas.

## **4.14 Effects on Energy Exploration, Development, Production, and Transportation**

### **4.14.1 No Action - Energy Development**

No effects are anticipated.

#### **4.14.2 Proposed Action - Energy Development**

As there are no road obliterations associated with this alternative, energy development would remain unchanged from its current condition.

### **4.15 Irreversible and Irretrievable Commitment of Resources**

#### **4.15.1 No Action - Irretrievable Resources**

No effects are anticipated

#### **4.15.2 Proposed Action - Irretrievable Resources**

Some irreversible and irretrievable commitment of resources would result from the proposed actions. Crushed rock from quarries would be committed to construction of the road system. Energy used to slash, burn, manage, and other management activities are generally irretrievable. Irreversible and irretrievable commitments as stated above are discussed in the Coos Bay District RMP.

## **Appendix**

### **Appendix A Maps**

Project Location Map Proposed Hardwood Conversion Units  
Deferred Units Location Map

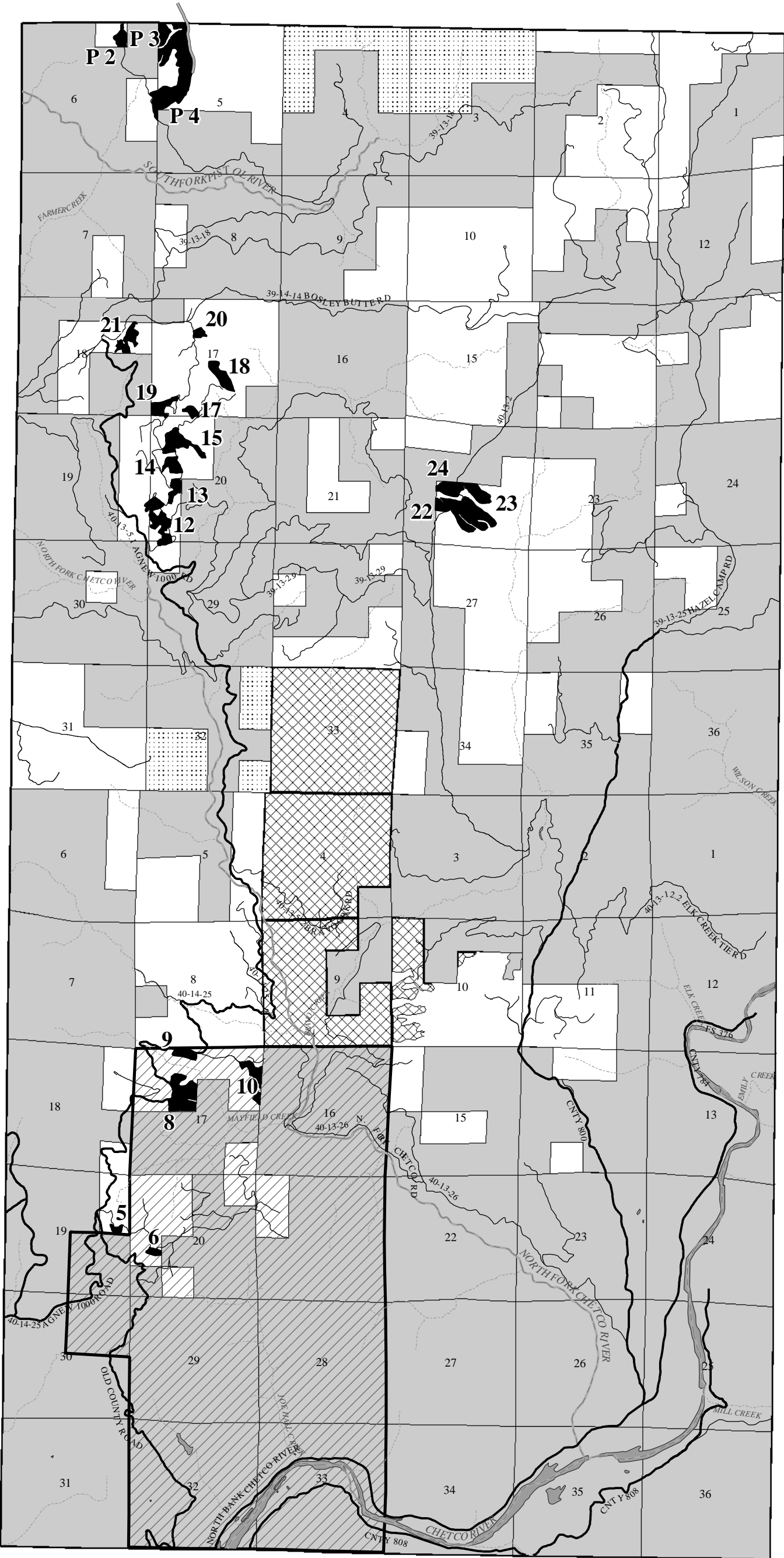
### **Appendix B Unit Summary**

Table B 1 - Proposed Hardwood Conversion Units  
Table B 2 - Units Deferred  
Table B 3- Anticipated Impact Season and Year

### **Appendix C – Aquatic Conservation Strategy Objectives**

# Curry Hardwood Conversions EA - Proposed Action

## Analysis Area



0.8 0.4 0 0.8 1.6 2.4 Miles

T. 39 & 40 S.  
R. 13 W.  
Willamette Meridian

## Map Legend

### Proposed Action

- Proposed Units
- Proposed Road Construction

### Land Use Allocations

- Connectivity
- General Forest Management Area
- Late Successional Reserve
- Other (Private)

### Sudden Oak Death

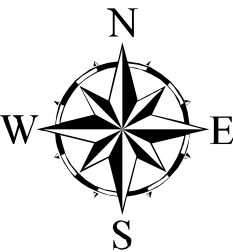
- Quarantine Area

### Streams

- Medium Streams
- Larger Streams

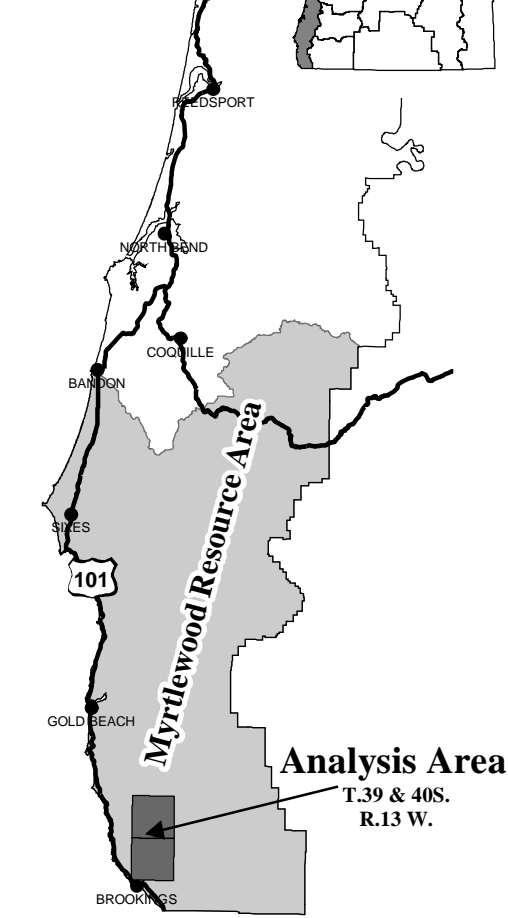
### Roads

- Minor Road
- Major Road



## General Location of the Mapped Area

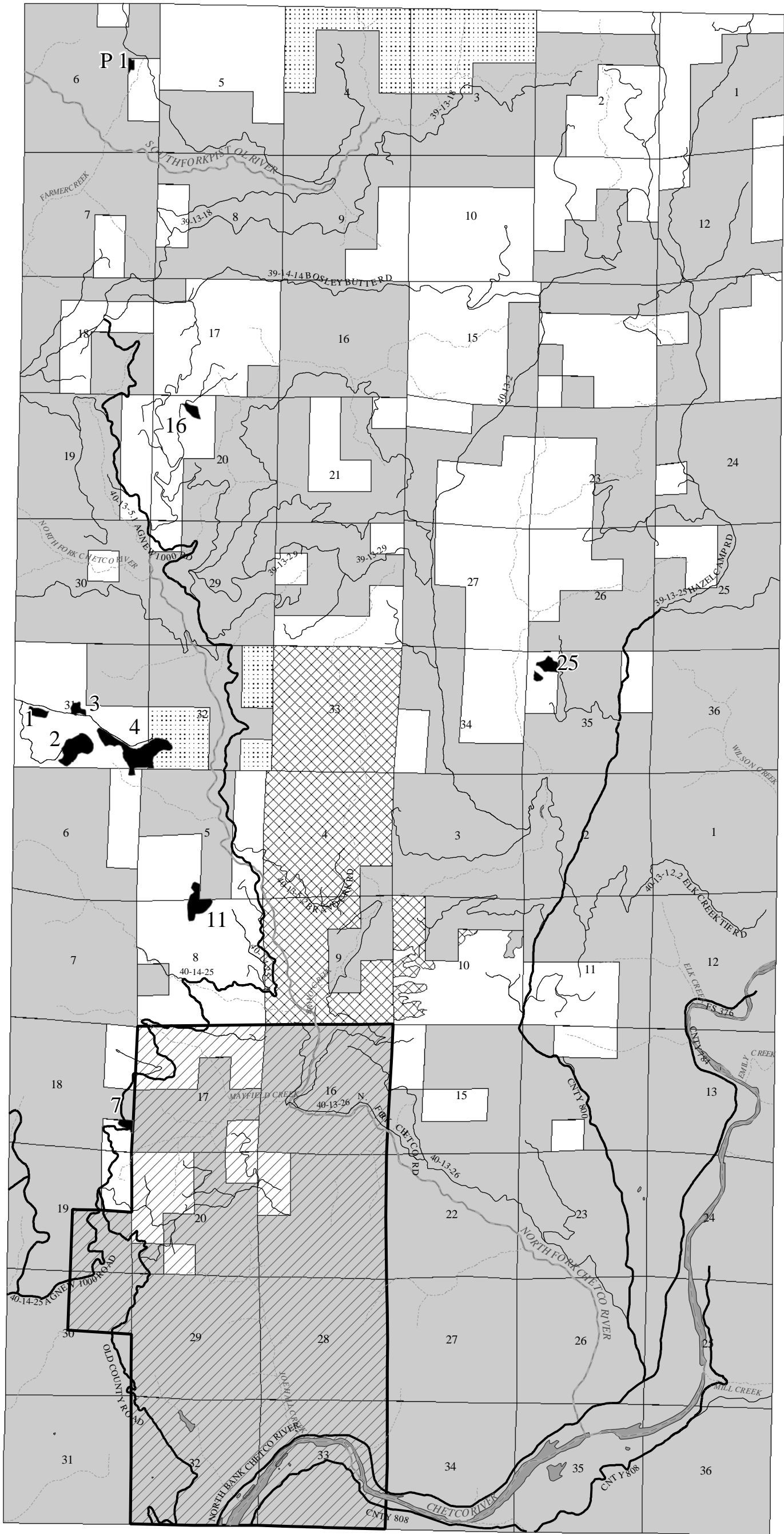
### Coos Bay District Oregon




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# Curry Hardwood Conversions EA - Deferred Units





## Analysis Area




### Map Legend

 Units Deferred from Analysis



#### Land Use Allocations

-  Connectivity
-  General Forest Management Area
-  Late Successional Reserve
-  Other (Private)



#### Sudden Oak Death

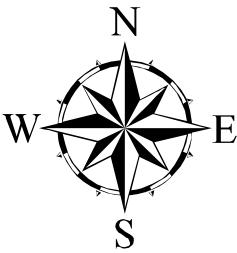
 Quarantine Area

#### Streams

-  Medium Streams
-  Larger Streams

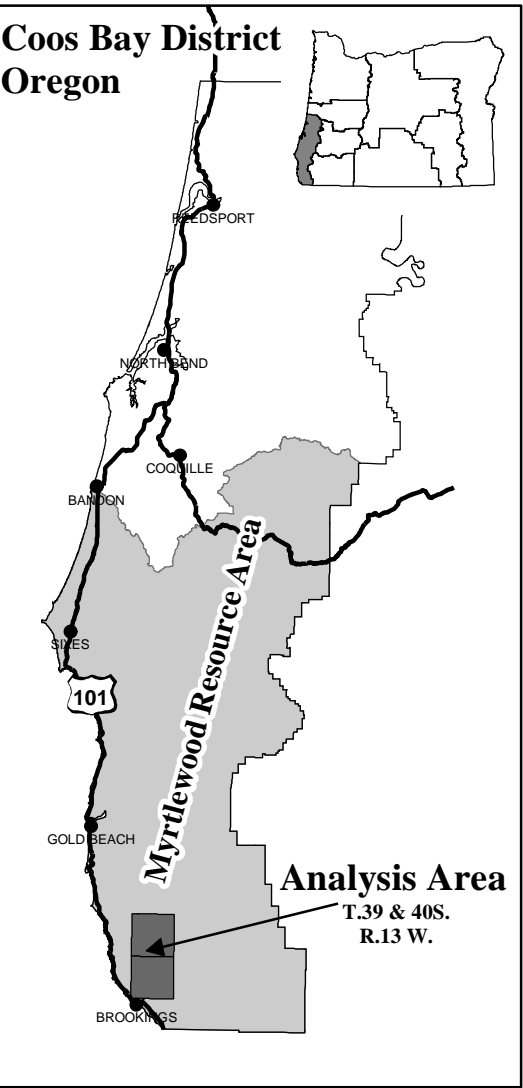
#### Roads

-  Minor Road
-  Major Road



### General Location of the Mapped Area

#### Coos Bay District Oregon



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## Appendix B Unit Summary

**Table B 1 - Proposed Hardwood Conversion Units in N.F. Chetco subwatershed**

Unit Number	Legal Location	Birthdate	Site Index	Trees per acre	Ave. DBH	Ave. height feet	Matrix Acres	Riparian Treatment Acres	GFMA Acres	Timing of Prescribed Burn
5	40-13-19	1930	140	2000	6	35	3.0	0	3	Spring
6	40-13-20	1930	140	2000	6	35	3.6	0.4	3	Spring
8	40-13-17	1940	140	1500	9	50	32.2	7.0	25	Winter/Spring
9	40-13-17	1940	130	1500	9	45	7.9	0.2	8	Spring
10	40-13-17	1940	110	2000	8	40	15.0	1.0	14	Spring
12	39-13-20	1930/1920	145	700	10	70	24.3	1.2	23	Winter
13	39-13-20	1930/1920	110	700	8	70	7.6	0.4	7	Winter
14	39-13-20	1930/1920	110	700	8	60	9.0	0	9	Spring
15	39-13-20	1930/1920	120	700	10	60	20.0	1.0	19	Spring
17	39-13-17	1930/1920	110	700	8	55	4.7	1.6	3	Spring
18	39-13-17	1930/1920	140	950	6	35	13.2	2.4	11	Spring
19	39-13-17	1930/1920	160	700	8	60	10.4	0.5	10	Spring
20	39-13-17	1940	120	2100	6	40	4.0	0	4	Spring
21	39-13-18	1930	120	2100	5	40	12.6	1.7	11	Spring
22	39-13-22	1940	120	1500	8	40	10.5	1.7	9	Spring
23	39-13-22	1940	120	1500	8	40	33.0	11.0	22	Spring
24	39-13-22	1940	120	1500	8	40	24.8	7.8	17	Spring
<b>Total</b>							235	38.0	197	

### Proposed Hardwood Conversion Units in S.F. Pistol subwatershed

P2	39-13-6	1930	115	1000	7	50	7.3	1.3	6	Spring
P3	39-13-5	1917	110	1000	7	50	8.4	3.3	5	Spring
P4	39-13-5	1917	113	1500	7	50	71.4	11.9	60	Spring
<b>Total</b>							87.1	16.5	70.6	

	Matrix Acres	Riparian Treatment Acres	GFMA Acres
<b>GRAND TOTAL</b>	322	54	268

Birth dates derived from stand exams, historic photos, operations inventory data, and/or fire history maps.

Stand data derived from stand exams and operations inventory data. Site Index is McArdele.

Stand exam data is on file at the Coos Bay District.

Unit acres and riparian acres are derived from GIS using horizontal distances,

Site Potential Tree height for N.F. Chetco is 180 feet and 160 feet for S.F. Pistol

Table B-2 Units Deferred

Unit #	Legal	Acres	Reason for Dropping
P 1	39-13-6	3	Stream at top and center of unit
1	39-13-31	6	Adjacent to occupied murrelet stand
2	39-13-31	25	“
3	39-13-31	5	“
4	39-13-31	46	“
7	40-13-18	6	Adjacent to unburned private land and house
11	40-13-5	20	Archaeological site and FGWN withdrawal
16	39-13-20	6	Tear dropped shaped unit on top – burning problems
25	39-13-35	9	Stream thru unit and 0.6 miles of road improvement on private

Table B - 3  
Curry Hardwood's Proposed Slash & Burn Units  
Anticipated Impact Season and Year

Spring 2003	Summer 2003	Fall 2003	Winter 2004
Slash units 12,13, 14, & 21 54 acres	Curing	Curing	Burn & plant 32 acres (units 12 & 13)
	Road Construction approx 31 stations	Road Renovation approx 32 stations	

Spring 2004	Summer 2004	Fall 2004	Winter 2005
Burn Units 14 & 21 ( 22 acres) Slash remaining units, except for unit 8 237 acres	Curing	Curing	Plant units 14 & 21 ( 22 acres)

Spring 2005	Summer 2005	Fall 2005	Winter 2006
Burn units 5,6,9,10, 15, 17,18,19,20,22,23,24, P2, P3, and P4 237 acres			Manual Maint. & Plant 237 acres

Spring 2006	Summer 2006	Fall 2006	Winter 2007
or slash any units not accomplished in Spring 05			Manual Maint. & Plant Spring 06 units

Spring 2007	Summer 2007	Fall 2007	Winter 2008
Slash Unit 8 34 acres	Curing	Curing	Burn & Plant Unit 8 - 34 acres Or Burn in Sping 09 and plant in 2010

Unit 8 try to burn in Spring if adjacent private clearcut is greened up.

May be some minor acreage adjustments in future due to actual field layout and traversing.

For EA purposes, operational decisions to be made on a yearly basis

## APPENDIX C

### ACS Objectives:

The intent of the ACS is to maintain and restore aquatic habitats and the watershed functions and processes within the natural disturbance regime by prohibiting activities that retard or prevent attainment of **ACS objectives**. The primary emphasis of the Standards and Guidelines for Riparian Reserves is restoration of the ecological processes and stream habitats that support riparian dependant organisms. This conservation strategy employs several tactics to approach the goal of maintaining the “natural” disturbance regime, but it is not possible to provide for the complete recovery of aquatic systems on federal lands within the range of the northern spotted owl within the next 100 years, and full recovery may take as long as 200 years.

The following narratives briefly describe how the proposed project would influence each ACS objective.

#### **ACS OBJECTIVE 1 - Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.**

Hardwood conversion activities proposed in these areas would result in an increase in riparian area conifers and in-stream large wood over time. Road construction and renovation would not degrade aquatic systems and would have negligible impacts on Riparian Reserves. Proposed project design features are expected to reduce or eliminate any impacts to the aquatic environment. Therefore, this action would maintain and restore the elements outlined in ACS Objective 1.

#### **ACS OBJECTIVE 2 - Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.**

New roads and culverts would not obstruct routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species. The riparian portions of the proposed project are intended to restore conifers and provide for future refugia in Federally managed Riparian Reserves. Therefore, the proposed action would maintain and restore the elements outlined in ACS Objective 2.

#### **ACS OBJECTIVE 3 - Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.**

The physical integrity of the aquatic systems in the vicinity of the proposed treatment areas would be maintained by the Riparian Reserve network and the project design criteria. Incorporation of PDC's described above would greatly reduce or eliminate impacts to stream bank and bottom configurations. The design criteria for the project would maintain the elements outlined in ACS Objective 3.

#### **ACS OBJECTIVE 4 - Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.**

The proposed project is not likely to have a measurable effect on water temperatures, turbidity, or overall sediment loading within each respective sub-watershed. The no-treatment buffers, directional falling, and slash burn timing and ignition restrictions would be sufficient to prevent temperature and sediment impacts.

Road construction and renovations involving earth-moving equipment would be accomplished during the summer months.

Refueling of gas or diesel-powered machinery would not occur in close proximity to stream channels. The contractor would be required to have a hazardous materials action plan to contain and clean up any spills. Mechanisms would be in place to respond quickly to the incident to avoid contamination of a waterway. The design features incorporated with the proposed action are expected to maintain the elements outlined in ACS Objective 4.

**ACS OBJECTIVE 5 - Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.**

Implementation of Best Management Practices (Coos Bay District RMP 1994) and project design features would prevent measurable increases in turbidity and fine sediment levels outside of the natural range of variability (see discussion for ACS Objective #4 above). Design features would minimize or eliminate sediment or turbidity increases that would measurably affect the sediment regime. The elements outlined in ACS Objective 5 would be maintained.

**ACS OBJECTIVE 6 - Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.**

The hydrology of the area is driven by precipitation in the form of rain. Less than 5% of the area may occasionally receive snow, but the quantity and duration of the snow does not normally contribute to rain-on-snow events. Insignificant or minor elevations in the annual yield, low flows, and small fall and spring peak flows may occur; however, water-consuming riparian forest between the conversion units and intermittent channels may minimize this effect. Any increase in the amount of forest soil water available because of the removal of vegetation and the corresponding reduction in evapotranspiration would likely be diminished downslope by riparian hardwood trees that transpire large volumes of water, particularly during the growing season. Therefore, peak, summer, and annual flows are expected to remain within the range of natural variability for cascade type channels in the analysis area.

**ACS OBJECTIVE 7 - Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.**

The streams in the vicinity of the project units are cascade channels without floodplains. No change in the current flow regime outside the range of natural variability is anticipated (see ACS Objective #6).

**ACS OBJECTIVE 8 - Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of down wood sufficient to sustain physical complexity and stability.**

The proposed action would have a negligible impact on streamside vegetation, and therefore, a negligible effect on stream temperature at the site or 5th field watershed scales. Removing tanoak and planting conifers would eventually result in localized stands of large conifers within these riparian areas. The development of larger conifers is also expected to result in increased contribution of large wood to stream channels over time. Adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, channel migration, and down wood recruitment are expected to be maintained and restored on federal lands through the retention of most riparian vegetation and reestablishment of conifers. Any wetlands identified during project planning have been protected with the prescription of no-treatment buffers. Therefore, the proposed action would result in the maintenance and restoration of elements identified in ACS objective #8.

**ACS OBJECTIVE 9 - Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.**

On a broad scale, the NFP provides for the maintenance and restoration of habitat to support well distributed populations of riparian-dependent species, primarily within Riparian Reserve networks. Other NFP components that further contribute to this goal include designation of Key Watersheds, mitigation measures for Survey and Manage Species, maintaining 15% of all watersheds in late-successional forest condition, and retention of northern spotted owl 100 acre core areas and marbled murrelet occupied sites in Matrix lands

The proposed action would maintain all NFP land use allocations and management standards within the North Fork Chetco and South Fork Pistol River watersheds, including the Riparian Reserve network. This would result in the protection of habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species. The proposed project would be consistent with the elements of ACS Objective 9

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